

MOTOR AGE

July 16, 1914

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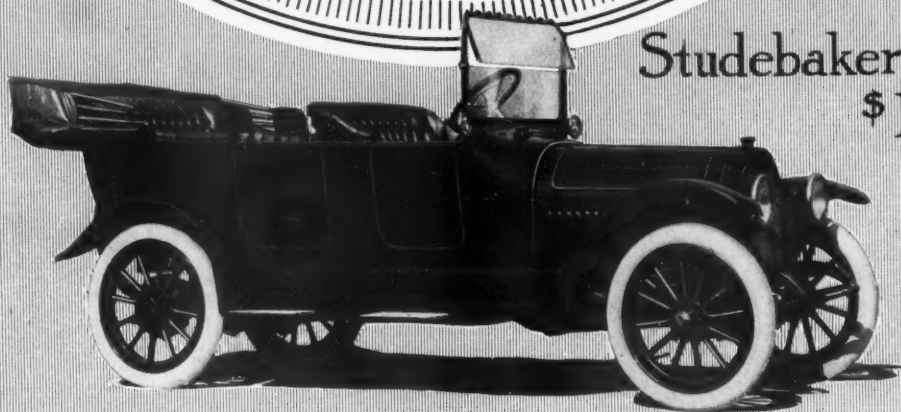
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There are many farmers who make more money out of five acres of ground by **intensive** farming than other farmers make out of one hundred and fifty acres by **general** farming.

The wise business man seeks **intensive** methods to market his product.

Motor Age is an intensive publication—a fertile field and a big yield of results because it reaches the man most interested in what Motor Age sells for the advertiser.

910 S. Michigan Avenue
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When ordering your new car, Specify

DUNLOP

DETACHABLE WIRE WHEELS

Such as are used as Standard equipment on the best European cars and thereby bring Your car up to date
LONG THE STANDARD OF EUROPE—NOW THE STANDARD OF AMERICA

EASY RIDING—All shocks caused by bumps in the road, sudden application of brakes or clutch are largely absorbed by the elasticity of 70 interlaced suspension constructed spokes in each Dunlop wheel.

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SAFETY—Many times stronger than wooden wheels. Any accident severe enough to demolish a wooden wheel would only bend a Dunlop wheel.

QUICK TIRE CHANGE—Dunlop wheels can be removed and replaced in 30 seconds. No removable nuts. No loose parts. Any lady can change Dunlop wheels. They are interchangeable.

THE SERRATED LOCK

Patented and used only on Dunlop wheels—is a positive automatic locking device. It is proof against accident and carelessness. Dunlop wheels can't come off accidentally. Look for this lock.

PRICE—Complete set, consisting of 4 wheels and 4 inner hubs ready to attach to any standard automobile; 1 spare wheel with dust excluder and one spanner wrench.....\$200.00

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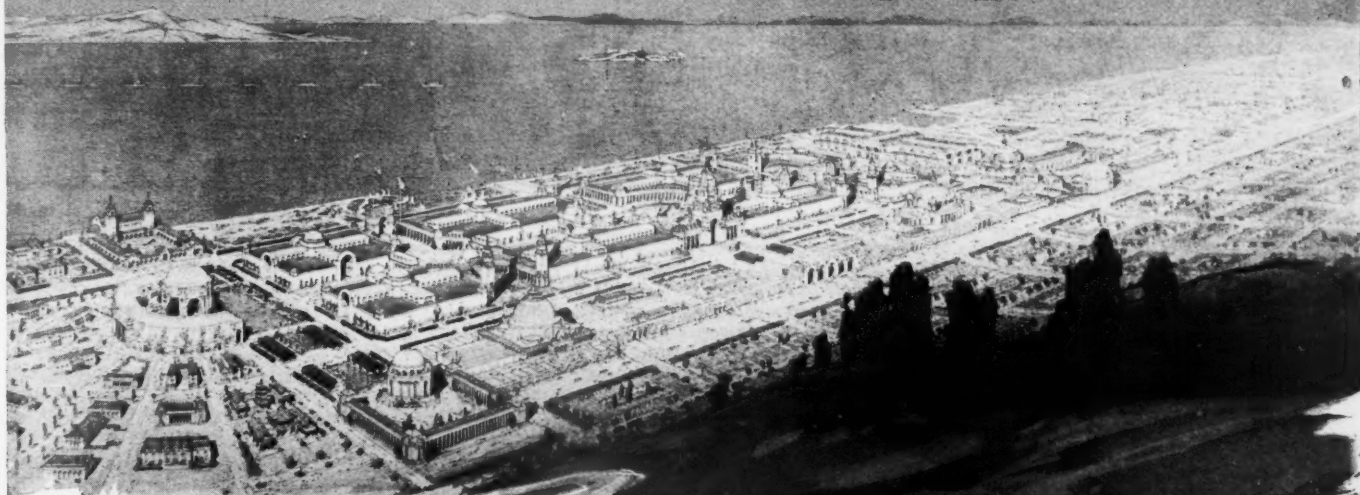
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Write for new illustrated catalogue "L" containing full information.

MOTOR AGE



The Call of the Coast California's Motoring Attractions for 1915

By L. J. Pinkson

*The rumble of the schooner's wheels,
The hoof-beats of the pony
Are still, the westward pilgrim steals
O'er plains and passes stony
On cushioned wheels of rubber tread
In progress scientific,
On roads with heroes' blood stained red
To reach the blue Pacific.*

CALIFORNIA is the Lorelei of the American commonwealths. For more than 4 centuries her seductive song has been heard and heeded. She has lured daring men, lustful for empire and riches, across uncharted seas, Indian-scourged plains and mighty mountains on whose peaks Death stood with a frozen hand of welcome. Time, commonly accepted as an arch-destroyer of beauty, has failed to wrinkle her cheek or streak with white her golden hair. With age, the charms of this most persistent enchantress have so increased that today she is irresistible.

Ho for California!

The goal of Balboa in 1513, the rainbow's end sought by the gold-seekers of 1849, California is the present destination of the modern adventurer and vagabond de luxe, the motorist, and a year hence the

transcontinental highways will be choked with California-bound tourists who cannot resist the call of the open road and the song of the siren of the American sisterhood. The wanderlust germ is rampant.

Neither an ambition to conquer new worlds nor tales of mountain streams yellow with gold are the motives which prompt the present and impending motor migrations to the west. New lands to discover there are none, the days of wild rushes to stake out claims are past, but California has new attractions with which to captivate the twentieth-century pilgrim—miles of magnificent macadam highways, which lead to places of scenic and historic interest, and two world's fairs—one at San Francisco and the other at San Diego—which have been built to commemorate the completion of the Panama canal.

AS THE PANAMA EXPOSITION WILL LOOK
Copyrighted by Panama-Pacific International
Exposition Co.

Never before in the history of America's world's fairs have expositions appealed to the motorists as do those which will be held in California in 1915. This is not difficult to explain. The vogue for long-distance motor journeys never has been as great as at the present time.

Three Good Highways

A transcontinental tour to California offers an opportunity to see much with the minimum of hardships as all three of the main ocean-to-ocean routes tap rich veins of scenic and historic wealth and have been marked for the guidance and improved for the comfort of motorists.

California, realizing that the twin expositions will attract thousands of motor-





PANORAMA SHOWING SOME OF THE COMPLETED EXHIBIT PAL

The above illustration shows the main exhibit section of the Panama-Pacific International Exposition to open in San Francisco, February 20, 1915. The Machinery, the three south naves of which are seen upon the right. Another building, Festival Hall, to accommodate delegates to conventions, will be included large building, in the foreground on the right of the photograph, which is copyrighted by the Panama-Pacific International Exposition Co. The five completed right, the Palace of Machinery. Again proceeding from left to right, the first completed exhibit palace on the left is the Palace of Education, next the Palaces on the left is the Palace of Horticulture. The steel dome of this palace is 186 feet in height and 152 feet in diameter and is surmounted by a cap 26 feet in due north towards San Francisco harbor, seen in the background. In the center foreground is seen a portion of the semi-tropical South Gardens. Before the illustration between the Palaces of Liberal Arts and Manufactures is that of the huge Tower of Jewels, which, when completed, will rise to a height of 435 huge domes of the group of paralleling exhibit palaces are each 160 feet above the floors of the palaces and are 100 feet in diameter. On the left of the area amusement district, where \$10,000,000 is being expended in the production of vast scenic and educational enterprises. Thirty-six nations have accepted the

ists to the golden state in 1915, is preparing to welcome and entertain them. It is rapidly completing its system of state roads recently authorized by the voters and will have expended \$18,000,000 when the chain of highways is finished. Directors of the San Francisco exposition have arranged a huge parking space that will accommodate all the motor cars that could possibly get to the fair in 1 day. This outdoor garage is situated north of the exposition grounds in the Presidio reservation but within easy walking distance of the main entrance. Gasoline and oil stations will be established there and machines will be guarded without charge.

Of especial interest to motorists will be the exhibition of motor cars to be held in the Transportation building, where hundreds of American and foreign models will be shown. In this building also will be housed a historical exhibit showing the development of the gasoline-propelled vehicle from its one-lung infancy to its six-cylinder days of highway supremacy.

Road Races to Be Attractions

As an extra special attraction, the directors of the San Francisco exposition have secured the sanctions for the 1915 Vanderbilt cup and grand prize road races and America's two speed classics will be run over a course in Golden Gate park. Two main boulevards form the north and south legs of the course which are connected by a city street on the east end. The west leg is along the ocean beach, where the hard packed sand permits of record speed. Here, at the starting and finishing line, a monster grandstand will be erected. Dates for the two races already have been selected. The Vanderbilt cup race will be held on Monday, February 22, the grand prize contenders will be sent away Sunday, March 7, and the speed carnival will close the follow-

ing Sunday, March 14, with the struggle for the Panama-Pacific trophy.

In fact, the Panama-Pacific exposition will go down into history as the first world's fair scented with gasoline.

But what of this colossal exposition and what is there to be seen there after a motor trek across the continent?

Facts About the Exposition

On the shores of San Francisco harbor, within the Phoenix city of San Francisco, has sprung up a magic city, created, it seems, by the wand of some cosmic magician. Here on the typical water front of a metropolitan city, where but a year ago there were only sandy dunes, low marshes, pools of tide water and deserted huts and shacks, a wonderful metamorphosis has taken place—how wonderful no man is better competent to realize than the once homeless, hungry, paupered resident who sought refuge there in 1906 when earthquake and fire formed a pitiless alliance against man and his works.

For here has been worked a miracle. The blue waters of great lagoons sparkle in the sun where once the stagnant pools refused the caress of its warm rays. Great white palaces, out-rivalling that of Alladin and ornamented with turrets and towers, domes and minarets, have replaced the grim huts and shacks. Here is a mass of color and light, a triumph of architecture and art, a most magnificent, most amazing expression of the progress and pluck of San Francisco, a city that accepted a world's charity 8 years ago but now stands with hands outstretched to welcome a world's people in 1915.

The site of the exposition, which covers an area of 625 acres, commands a wonderful view of bay and mountain. Directly opposite the fair grounds is Mount Tamalpais, the highest peak anywhere about

the bay, and under its shadow is Sausalito and the yacht harbor, which is always dotted with the white wings of sail boats and the black funnels of ocean greyhounds.

The Presidio reservation, the government military post, is utilized as the setting for part of the exposition. It is a beautiful park in itself, and well worth going far to see. Here are huge guns and mortar batteries and some of the nation's finest soldiers.

Exposition Groupings

The entire exposition is grouped in a marvellously compact whole with the min-



THE AMERICAN PIONEER

Statue for San Francisco exposition, by S. H. Borgheim. Photograph copyrighted by Panama-Pacific International Exposition Co.



ACES AT THE PANAMA-PACIFIC INTERNATIONAL EXPOSITION TO BE HELD IN SAN FRANCISCO NEXT YEAR

group includes the Palace of Fine Arts, the huge steel frame of which is seen upon the left and nearest the Golden Gate, and it extends to the Palace of in the completed group. Festival Hall will be located immediately to the left of the Service Building, which is the small appearing structure, although really a exhibit palaces facing the harbor from left to right are the Palaces of Food Products, Agriculture, Transportation, Mines and Metallurgy and, on the extreme of Liberal Arts, Manufactures, and Varied Industries, which is opposite the south portion of the Palace of Machinery. The large structure in the foreground height and weighing 28 tons. The dome of the palace has now been covered with wire netting glass. From the center of the picture the camera was pointed exhibit palaces, facing the harbor, is a great sea esplanade, the Marina, 400 feet in width and elaborately landscaped. The steel work in the center of the feet; the visitor proceeding north will enter from the South Gardens beneath a huge archway 125 feet in height into the superb Court of the Universe. The shown in this picture is the vast stretch devoted to the pavilions of the nations and the buildings of the states. On the right is the great concessions and incitation of the United States to take part in the exposition and the industries of every country in the world will be represented.

imum of waste space. The best and most widely-known designers of the world have toiled there and the result is wonderful—no waste, no clutter and the artistic predominant.

City of Big Buildings

Behind a wide strip of park space bordering the bay has been erected three groups of palaces, which will be separated by lagoons and beautiful gardens and clumps of trees. The central group consists of fourteen exhibit palaces. On the

east are the concessions buildings. On the west, from the slope of the hills down to the bay, are the palaces of foreign countries and of the American states and territories. Behind them, at the extreme western end of the fair grounds, are the live stock pavilions and the Presidio parade grounds.

From the harbor side, the great central group is the key to the whole plan. This is the exposition proper, for here the exhibits that are the backbone of the whole show have been massed. The fourteen palaces, now nearly completed, are the loftiest exposition buildings ever erected. The eight buildings in the center of the scheme, forming as they do almost one compact mass, cannot fail to leave a lasting impression on the mind of the sight-seer.

Along the Harbor Front

From a distance, the central group of main exhibit palaces, facing for more than a mile on the harbor front, will present the effect of almost a solid mass of wonderful buildings, but on closer inspection it will be seen that the structures are separated by open courts. Three courts run north and south through the central group, the buildings of which are connected by passages, arched overhead and beautifully decorated. Through this method of arcades and arches the four main buildings of the central group appear practically as one. Their walls and the adjoining arches form the main northern facade which greets the eye of the visitor who comes into San Francisco from the sea. By day the glittering facade will appear as a dream city and by night the pillars and minarets of the palaces will reflect the millions of lights so artistically arranged by the engineers.

In front of the facade for more than a mile along the harbor's edge, an esplanade

has been built, with vast flower beds in the midst of which fountains will play, and beautiful statuary be placed. Throughout the fair grounds, California's wealth of flowers will be on display. The esplanade has been named the Marina.

Boulevards for Motorists

The main group of buildings lie between a tropical garden or boulevard running east and west along the fringe of hills nearest the city upon the south, and the esplanade along the shore of the bay on the north. The boulevard, known as the Alameda, is 1,800 feet in length and 300 feet wide. Fountains, lagoons and statuary abound there and tropical trees turn aside the winds from the bay. The east end of the Alameda opens out into a plaza on Van Ness avenue, San Francisco's most beautiful boulevard. The west end, in the Presidio, is surmounted by a commemorative arch of triumph.

The theme of the exposition, its sculpture and mural decorations, deal with the spirit of achievement through which the American people have completed the Panama canal. In the courts are seen the highest types of Oriental and Occidental sculpture and painting executed by America's noted artists. The grounds will be a vast garden spot of temperate and semi-tropical fruits, flowers and trees.

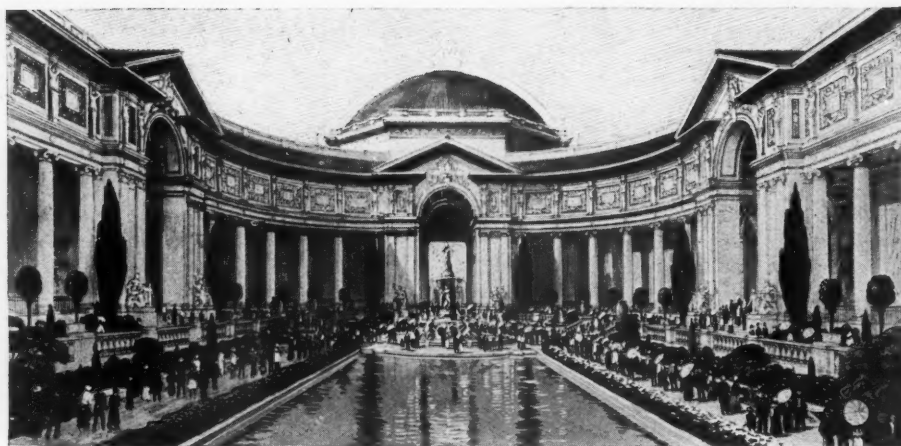
A brilliant yet harmonious color scheme has been selected by Jules Guerin, one of the world's best color artists. The prevailing color scheme of the exposition is an ochre, or tawny buff, several shades removed from white, but giving the appearance of white at a distance without the glare occasioned by sunlight falling on the spires and domes of the buildings.

In the courts there will be that wonderful blending of colors that warms the artist's heart and delights the layman. Pompeian red, Italian blue, and vermillion



RAIN

San Francisco exposition statue by A. Jaegers. Photograph copyrighted by Panama-Pacific International Exposition Co.



Copyrighted by Panama-Pacific International Exposition Co.

ONE OF THE SAN FRANCISCO EXPOSITION COURTS

and orange will predominate. The court system is unique in that it has allowed each artist to select his own color scheme and still not clash with the general arrangement.

Oriental Bazaar a Feature

Eight of the main palaces form an Oriental bazaar. Four of the buildings face the bay and four face the hills of the city. The walls of the eight exhibit buildings are broken only by great entrances, giving easy access to the interior courts and passages. The group is divided from north to south; in the center by the Court of the Sun and the Stars; on the east by the Festive Court; and on the west by the Court of the Four Seasons. Two south courts have been cut like niches in the walled city—one south of the Court of Four Seasons and one south of the Festive Court. A huge court in Italian Renaissance lies between the rectangle and the Palace of Fine Arts.

Of all the courts, the Grand Court of Honor, or the Court of Sun and Stars, 750 feet in width from east to west and 900 feet along its main axis, is the largest and most imposing. At the south end of the court is the Tower of Jewels, rising 400 feet in height and dominating the architecture of the exposition. The upper part of the tower is terraced; the terraces lead upward to a group of figures supporting a globe typifying the world. The tower will be studded with lights which will glitter like a gem when the rays of powerful searchlights are turned on them. The base of the tower occupies an acre of ground.

The most impressive feature of the Court of Sun and Stars is the classic colonnade extending around the court and surmounted on one side by figures representing the spirit of the east and on the other by figures symbolizing the spirit of the west. These figures are 110 in number and each stands, 14 feet in height.

A great sunken garden has been built in the center of the court with benches providing seats for 7,000 persons. Fauns, statuary and fountains form the decorative scheme. To the east will be built a



SAN FRANCISCO'S CHINESE EXHIBIT
Copyrighted by Panama-Pacific International
Exposition Co.

huge triumphal arch connecting the Courts of the Sun and Stars and the Festive Court. This arch will be surmounted by statuary symbolizing the progress of the Orient. To the west, on the approach of the Court of Four Seasons, will be an arch with statuary representing western civilization with a huge prairie schooner as the center of the group.

Avenues Beautifully Decorated

As the visitor passes beneath the huge arches from one court to the other, he will traverse great avenues lined with mural decorations of the highest type and statuary designed by the world's greatest masters. Huge pools of water will reflect the lofty colonades. Giant potted palms and banks of flowers will lend beauty to the scene.

Passing to the east of the Festive Court, the visitor will find an Oriental setting of great splendor. The Festive Court is dedicated to dancing, acting and music and will abound in fountains and color. Ingenious electric lighting systems will make the fountains seem like clusters of jewels at night. The architecture of this court is of the Spanish-Moorish type. The walls

will be decorated with paintings and sculpture will abound. Orange trees in fruit and in blossom will contrast with the huge colonades and stair cases.

From the Court of Sun and Stars passing west, the visitor will come to the Court of the Four Seasons, of which Henry Bacon, the creator of the Lincoln Memorial, is the designer. Statuary suggesting the four seasons will be set in niches cut into the four corners of the palace. In the center will be a statue of Ceres, the goddess of agriculture, dispensing the bounties of nature.

Water Front Ornamentations

The ornamentation on the water front will be on a colossal scale. The Court of Four Seasons is entered through a great gateway in which will be a statue of Columbus. The visitor will pass through the entrance under a huge tower to the esplanade fronting on San Francisco bay. Ornamenting the entrance will be statues of the great voyagers set in deep niches.

Before the entrance to the great Court of Sun and Stars will be a huge column whose spiral will depict man's impulse toward achievement and at the summit will be a figure of youth directing his arrow toward the sun. On the left and before the Festive Court will be the gates of Balboa before which will be a statue of the discoverer of the Pacific ocean. Each of the three main north and south courts will open out on the esplanade on the north and on vast beds of flowering plants in gardens on the south.

On the east of this central group of buildings is found the area devoted to amusement concessions, a narrow strip of 65 acres, through the center of which runs a broad avenue, 3,000 feet, and known as the Street of Concessions. Familiar scenes from the Panama canal will be reproduced here and the notable concessions will be grouped on either side of the street.

Upon the west and nearest the Golden Gate is the great area set aside for the states and nations pavilions; the state buildings will be set along the Avenue of Commonwealths paralleling the harbor edge, while the pavilions of the nations will rise in tiers in the Presidio reservations. The whole effect will resemble a great residence district. Still farther to the west and extending almost to Fort Point, the southern limit of the Golden Gate, will be the exposition stock pavilions, race track and parade ground.

But the Panama-Pacific exposition is not the only magic city that has been raised in California to commemorate the nuptials of two oceans. Six hundred miles south of San Francisco lies San Diego, where the Panama-California exposition is now nearing completion preparatory to being opened January 1, 1915. It is not a rival but a correlative attraction, not as pretentious perhaps as the fair of the coast metropolis, but just as attractive.

Balboa park, the 1,400-acre site of San

Diego's exposition, has been converted into a great garden and when the fair is over, will serve as a permanent municipal playground and show place. It stands 300 feet above sea level and overlooks the city, Point Loma, San Diego bay and the Pacific. So commanding is the location that the light on the great dome of the California state building, 500 feet above sea level, is visible to mariners 100 miles out at sea.

The exhibit palaces of the San Diego exposition will not be torn down at the close of the fair. The buildings are of enduring material and construction and so designed that they can be utilized later as museums, art galleries and auditoriums.

Surrounding the exhibition grounds is the most sightly "fence" ever calculated to keep deadheads from crawling in under the canvas. At every world's fair heretofore it has been necessary to build a high board fence as unsightly as it was obstructive, but at San Diego such a fence is not necessary and in fact would be out of place. The enclosure at San Diego is a wire fence, 8 feet in height and about 4 miles in circumference. Planted between and around the supporting posts are thousands of flowering vines which, by the time the fair opens will completely hide the wire screen and form a wall of foliage for the magic city as beautiful as it will be effective.

Fine Roads Near San Diego

If for no other reason than because of the excellent roads leading from San Francisco to San Diego and the splendid opportunities for touring in southern California, eastern motorists will be attracted to the Panama-California exposition. Southern California is a motoring paradise.

Its good roads are not confined to the cities. They link the cities, they stretch for miles over unpopulated country, they form radials from the great highways to the east and make a part of the new Southern National highway which extends from Fort Worth, Tex., where there are three eastern connections, to San Diego. They traverse the gorgeous back country of San Diego, up along the Poway pass, where a ribbon of road blasted from the

solid rock winds along the edge of towering cliff and awful chasm, the passenger gazing at the far higher snow-capped peaks away up the valley or down to the sea beyond San Diego. Another highway sweeps along the shore of the Pacific, so close that the surf at high tide washes the foot of the road's solid foundation. And here and there each highway glides into a green valley, and beneath shady eucalyptus or palm or acacia, passes great orchards on each side, the trees laden with olives or bright with the fruit or flower of orange and lemon and grapefruit.

A marvelously beautiful country it is and a phenomenally rich country—where citrus land sells for \$3,000 an acre simply on its value as producing an annual gross



MAIN ENTRANCE TO MOTOR TRANSPORTATION BUILDING AT SAN DIEGO



SAN DIEGO'S ARTS AND CRAFTS BUILDING FROM THE EAST

of \$500 in fruit. This is done in a land which never knows frost in the midst of winter. Along the coast where the influence of the Japan current is felt, there is never a day of disagreeably hot weather, and rare are the rains to prevent driving. Just 6 days there were in San Diego last year when the sun did not shine.

One prime object of the Panama-California exposition which San Diego is to hold all of next year is to furnish a definite occasion for 1915 motor tours which should show to the eastern motorist the possibilities of the southwest for later visits. San Francisco is to hold the Panama-Pacific exposition during 10 months, but San Diego's climate allows the Panama-California fair to remain open from New Year's until New Year's, with its most spectacular features the out-of-door exhibits which crystallize the whole out-of-door life of the southwest. Climate, again, is responsible for the best of these features, the growing citrus orchard, the 5-acre model intensive farm, the tea plantation, and above all the extraordinary landscape development. The grounds are thick with semi-tropical foliage, and the crimson rose and purple bougainvillea clamor high over the towers and domes of the buildings, uniformly along the beautiful lines of the Spanish colonial school of architecture. The great parking area about the grounds is cut with deep canyons, grown to palm and cypress and acacia, typical of the territory which forms the back country of San Diego.

East Greatly Interested

Eastern inquiries received by the motor clubs of the southern section are running in the neighborhood of 1,000 a week, with 7,000 received in a single month. This indicates that next year's tours from the east will far exceed all past records, and the states and counties are preparing for the friendly invasion. California appropriated \$18,000,000 at one clip for the further improvement of the main highways, and the counties were instructed to make appropriations for the connecting roads. One county was unable to do so, and the adjoining counties volunteered their support. New Mexico has devoted 60 per cent of her total bonding power to the good roads cause, and has called a state conference to force the several communities to take care of their laterals.

The American Automobile Association is preparing complete data for 1915 tours, and arranging for the marking of the highways. The plan most favored is to stimulate traffic along two of the routes, in order that tourists may be given the opportunity of covering the widest possible range in the transeontinental journeys to and from the expositions. The Southern National highway, of comparatively recent development, is strongly urged for one of the routes, whether going or coming depending largely on the season the individual may select.

This route is passable the entire year

as a result of the corduroying of sections which only 2 years ago were hopelessly deep in dry sand during a portion of the 12 months. The northern routes, in the nature of things, are impassable during the snow season, and if they are taken at all they should be taken in the warmer time of year. Thus, an early tourist would travel westward via the Southern, cross the divide west of Yuma and run on down to San Diego. Thence at the close of his stay, he would follow the coast route northward via Los Angeles to San Francisco, and return eastward by Overland or Santa Fe or Lincoln highway. A late tourist should simply reverse the route. In either case there would be offerings of side trips of more than passing interest. The Southern route offers interesting detours to the Painted Desert, the Grand Canyon, and from half a dozen points along the route there are short trips across the border and into Old Mexico. San Diego itself is less than 20 miles from Tia Juana, where there is what the natives solemnly say is a fort. One small field piece on the American side of the border is considered adequate protection from the fort should Mexico really become obstreperous.

Desert Ride Interesting

The desert ride is worth the taking. No other section of the country offers anything quite like it, with the towering, bright-huedness, the incomparably blue sky, the long stretches of hot sand where nothing will grow save cactus and buffalo grass and the gray sagebrush. And yet, dotted along the route are occasional cases, where lies an Indian pueblo whose people have found water and turned it on the land and built up a village which is brilliant with the blaze of peach blooms. An amazing sight is this fertility in the midst of desolate sand. It is all a taste of what comes on the other side of the divide, where the white man has carried a far greater volume of water and transformed desert into a fairyland of fruit and flower. High looms the snow-capped peaks in that area of fertile land and far stretches the mighty Pacific, and rich is the land between. And yet the time is not far distant when that whole desert space to the east will be touched by the magic water and the whole southwest will bloom, as today scarcely a tenth of it blooms.

The Old West Passing

The day of the old west is passing, and the new west is coming in, following swiftly the opening of the Panama canal. There have been many expositions celebrating many anniversaries. California in 1915 will celebrate not an anniversary, but an event. It is not a harking back to other days, but a heralding of great things to come.

Indications point to both expositions coming up to the expectations of the promoters, and it goes without saying that California will attract a great army of motorists who will drive across country.

Fourteen Cars Perfect in Alpine Tour

Strenuous Reliability Eliminates Many Entrants

VIENNA, June 25—Of the seventy-five cars that started in the famous Alpine tour, that started June 14 and finished June 23, forty survived the trying ordeal and went through the hands of the promoting club's technical committee, which has just made its report.

The finding of this committee gives the honors to the Audi, which had 80 per cent of four perfect scores, both on the road and in the technical examination. There were fourteen that came through these two tests with clean bills of health. In addi-

Klement, Audi, Fiat and Opel. The following had been penalized on the road and also were demerited in the technical examination: Two Puchs, and one each of the Benz, Vauxhall, Braga, Austin, N. A. G. and Hansa.

The tour was a most remarkable one, being extended over a distance of 1,828 miles, there being a timed hill-climb each day, while the route wound in and out of the Alpine passes and over grades that tested each car to the limit. In each climb a car was given so much time in which

to go up to escape penalty, the time varying of course with the car.

The first day's run was from Vienna to Klagenfurt, a distance of 260 miles. Eight passes had to be ascended, the altitudes being 1,431, 2,644, 3,307, 3,780, 3,885, 3,613, 3,605 and 2,173 feet in the order named. The second day, from Klagenfurt to Trieste, 250 miles, there only was



tion to the Audi, there were four Austro-Daimlers, two Minerva-Knights and one each of the Rolls-Royce, Benz, Protos and Fiat.

There were ten others that went through the technical examination without demerits, but which had been penalized previously in the road test. This ten consisted of two Graf & Stifts, two Fiats and one each of the Horch, Praga, Raba, Austro-Daimler, Minerva-Knight and Wanderer.

Those penalized in the technical examination but which had perfect road scores were: Two Hansas, two Puchs, and one each of the Laurin &



UPPER ILLUSTRATION—RADLEY'S ROLLS-ROYCE, ONE OF THE WINNERS IN THE ALPINE TOUR—LOWER ILLUSTRATION—ONE OF THE PASSES IN THE DOLOMITES



MRS. BOSTON AND
CADILLAC IN ALPINE
TOUR—LOWER IL-
LUSTRATION—ONE
OF THE CLIMBS

one pass, but the cars had to climb 26 miles, the maximum gradient being 1 in 14. The third day was from Trieste to Toblach in Tyrol, 248 miles, which included three passes, one of 14 miles, a second of 27 miles and a third of 7 miles.

On the fourth day the cars went to Bozen, also in Tyrol, a distance of 200 miles, the route including the world-famous Dolomites. The altitudes ran 6,563, 6,950, 6,150, 3,147 and 5,013 feet and the climbs were 23, 30, 28, 7 and 21 miles.

Mountain Passes Numerous

The Jaufen pass, altitude 6,495 feet and 37 miles in length, and the Hochfinstermuenz pass, altitude 4,616 feet and 50 miles in length, had to be climbed on the fifth day, going from Bozen to Innsbruck, 210 miles. The next day the tourists rested at Innsbruck, where they were given a reception by the Tyrolese A. C. The next day, June 20, they drove to Villach, 225 miles, going up three passes of 18, 24 and 17 miles, respectively. The seventh day was to Salzburg, 212 miles, and there were five passes on the route, including the fearful Turracherhohe, with an altitude of 3,905 feet and a gradient of 1 in 10. This climb was 38 miles in length.

The last day's run was from Salzburg back to Vienna, the starting point, a distance of 223.4 miles. There were no hard climbs on this day, but speed trials were held near Wels in upper Austria.

There were three American Cadillacs in the tour but none passed through the hands of the technical committee at the finish. One of the Cadillacs was driven by a Mrs. Boston.

COLORADO HAS 15,340 CARS

Denver, Colo., July 9—The total registration of motor cars in Colorado thus far for 1914 is 15,340. This is a gain of more than 2,000 above the total registration for 1913.

Washington Adopts Stringent Traffic Regulations

National Capitol Eliminating Congestion on Streets

WASHINGTON, D. C., July 10—Thirty days from today many important changes in the traffic regulations will go into effect in this city. One of the most important of the new rules is that no vehicle, except a commercial vehicle, loading or unloading, shall stand for more than 15 minutes at any place on Fourteenth and Fifteenth streets, between Pennsylvania avenue and I street, the most congested section in Washington, between the hours of 8 in the morning and 6 at night. Exception is made of government vehicles. A parking space is provided on Vermont avenue.

Another important regulation is that every horse-drawn vehicle shall have a metal tag so affixed on the right side as to be visible 20 feet. A charge of 50 cents is to be made for each tag. No vehicle,

horse-drawn or motor-propelled, will be allowed to approach within 15 feet of any street car while the same is stopped or stopping for the purpose of taking on or unloading passengers, nor within such distance of the place where a passenger shall have left the street car until the passenger shall have reached a place of safety. Vehicles moving north or south will have right of way over those moving east or west.

The regulations also prohibit the use of a motor muffler cut-out as well as unnecessary or excessive smoke. Electric or acetylene headlights are prohibited on the streets unless the rear reflectors are removed or the front glass is either ground or covered with some material of sufficient density to prevent dazzling or blinding to persons using the streets.

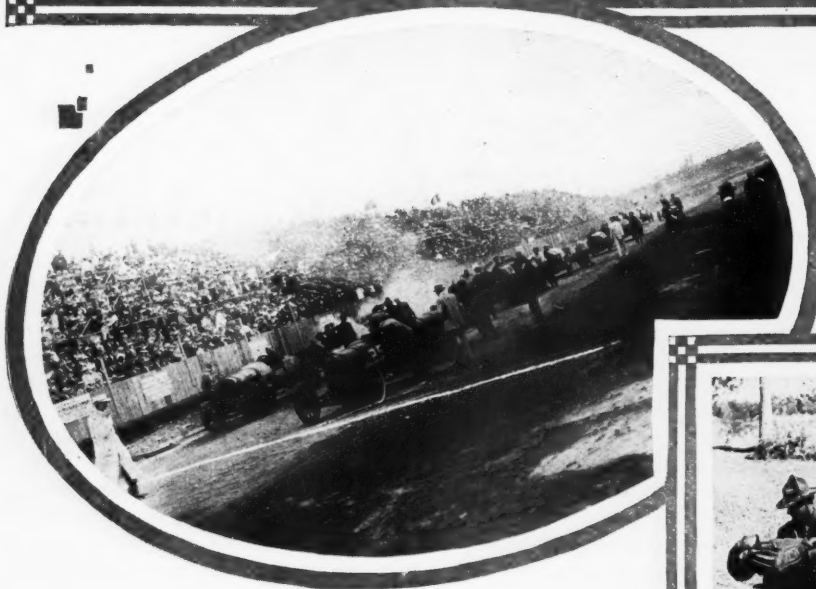
The new regulations expressly set forth that pedestrians should avoid interference with traffic and to this end should not step from the sidewalk without first looking to see what is approaching. They are further admonished to cross the street at a right angle, preferably at a regular crossing at the end of a block and, where a traffic policeman is stationed, wait for his signal. Under the old law, which never has been enforced, pedestrians were compelled to cross a street at a regular crossing, but under the new regulations it is optional where they cross, although the regulations ask pedestrians to use the regular crossings instead of crossing at any point.

There are eighty sections in the new regulations and nearly all of them apply to motorists. Violations call for fines ranging from \$1 to \$40 for each offense.

IN the land of the luxuriant pompadour, the Fiji Islands, a missionary need not fear being served a la frie-see if he is accompanied by a motor car. The natives of the South Sea derive much sport in riding in this new and strange vehicle and are the best patrons of the taxicab drivers of the coast towns. The accompanying illustration shows what ardent motorists the Fiji Islanders really are.



Through the Camera's Eye



EQUALLY as famous as "Doc" Cook, who introduced the succulent gundrop to the natives of the polar regions, is J. Thornsteinsson, "farthest north" agent at Reykjavik, who already has contracted for and agreed to dispose of six Overland cars in Iceland where the drivers will never experience any difficulties from overheating. Makers of a dependable anti-freeze solution may accept this information as a tip to the wise.

GODS of speed made Tacoma their shrine on the Fourth of July and thousands turned out to do them homage and witness the three races which were run over the new 2-mile course on the outskirts of the city. The accompanying illustration shows the cars lined up at the tape before the start of the Montamarathon race which was won by Earl Cooper in the Stutz. The other two races were won by Parsons in a Frantz, and Hughes in a Maxwell. The course is a road-racing circuit 2 miles around, with the turns well banked like a speedway. Its speed has been demonstrated.



IN war, the motor car is a life-saver as well as a life-destroyer. During recent army maneuvers along the Mexican border, the hospital corps of a California state regiment used six Hupmobiles for field duty. It was found that the wounded could be removed from the battlefield in one-fifth the time it took in the old way.



THIS picture might be entitled "Eddie Rickendacher About to Spurn a \$5 Minimum Wage Offer from Henry Ford." The famous Teuton speed baron circled the Sioux City speedway 150 times July 4 in 3 hours 49 minutes 2 seconds and received as his fruits of victory a check for \$10,000. Consequently, he is not in the market for any \$5 per job. The man about to unhand the check—the tear in his eye does not show—is E. R. Schultz, managing director. The other gentleman in negligee is W. W. Stevens, who converted a corn field into a race track on which an average speed of 78.6 miles an hour was made.



A MOTOR car laundry is Detroit's latest innovation. Two Californians, M. S. Hoff and J. F. Irvine, recently pitched a tent on Woodward avenue and startled the motorists by announcing that they would wash a car, clean the motor and polish the brass for \$1.50. Motor car laundries are not new on the Pacific coast. In Sacramento there is one establishment that employs sixteen men to get the cars next to Godliness.



DRIVERS of the coast-to-coast Saxon, which recently completed the transcontinental trip, discovered that they should have equipped the car with pontoons when they approached Gibbons, Ia., where they encountered a washout resulting from 2 days of continuous rain.



THE principal highways of Massachusetts, Rhode Island and southern New Hampshire are patrolled each summer by a squad of motorcycle Samaritans who warn motorists of speed traps, give route directions and tender first aid when gasoline tanks are empty or cars break down far from the nearest garage. The motorcyclists are in the employ of the Automobile Legal Association of Boston, which spends between \$4,000 and \$5,000 for this altruistic work.



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Preparing for the Vacation Tour

DO not start on your vacation tour without good preparation. The pleasure of the touring will be largely proportionate to the preliminary attention you give it. Whatever precautions you take in advance will conserve energy, time and patience during the tour. It also may conserve your pocketbook.

HAVE your car ready. It may have been running perfectly all this season, during which you have been taking trips of 200 or 300 miles, but before starting off on a circuit of 1,000 miles or more have it looked over or look over it carefully yourself. There is nothing so discouraging as having your 2 weeks of vacation upset by 2 or 3 days spoiled waiting for car parts to reach you from the factory or from the nearest dealer.

FOR once in your life adopt the stitch-in-time program. It will not cost you much in money and will be an excellent investment. Here are a few points about your car to look over: If your brakes are not in perfect adjustment see that they are attended to. Often it is too difficult a task to set up an internal set of brakes, and if you have to have it done get the dealer or your garageman to do it properly. If your car is an old one, it may be necessary to have one of the sets of brakes refaced. Do it before you start. Your car must be safe when on the road. Look to the brakes just as carefully as you would look to a slipping clutch before starting out on such a trip.

SEE that steering-gear parts are in good shape. If there is too much back lash in the steering gear have it taken up. A new bushing may be needed. Look over the steering-knuckle parts. Often bushings become worn and in the rough usage of a tour a pin will break and, besides holding you up for a day or so, may endanger your entire party. Take the old leather coverings off the steering connections, clean these connections with gasoline and see that parts are tight. You may not have had these leather coverings off since the car was new, and you owe it to the car, to your passengers and to yourself to take this precaution before starting out on the trip.

SEE that the universal joints are well packed with the lubricant that the maker recommends. In these days of direct drive the universal joints are rotating as rapidly as the crankshaft. It is of prime importance that crankshaft bearings be adequately lubricated, and it is also very important that universal joints be given due care. It may be beneficial to force some oil through the joint to be sure that any lubricant that has hardened is forced out of the joint. Then fill the grease cups or other lubricating means adequately. When on the road the grease cups should receive daily attention, and if you are making 200 miles per day it is a good investment to give the grease cups on the joints a few turns at the noon stop. So often we give the clutch every lubricating attention and yet overlook the joints which are working at as high speed as the clutch. See that the leather covers on the joints are in good shape.

BUT go further in this preparation role. See to it that the lubricant in the rear axle and gearbox is up to the required height. If these parts have not been thoroughly cleaned out and

washed out with gasoline, do so, and you will be surprised at the improvement. The recent Indianapolis race demonstrated how a few seconds can be added to the speed of a car by using castor oil in the differential in place of some other form of lubricant. In the same way you can save time and power by cleaning out these parts of the car and filling them with fresh new lubricant of whatever kind the maker recommends.

FRONT and rear wheel bearings may not have received any attention from you since you purchased the car. Ask the repairman at your dealer's place what attention they should receive. If he says "none," then consult your garageman and find out if he does not know of trouble arising from neglect of such parts. Recently a dealer said that it was rarely necessary to screw up the grease cups for the rear wheel bearings, but a few days later this same dealer was brought face to face with a broken rear wheel bearing caused directly by lack of lubricant. Not only was the bearing destroyed but the axle sleeve or housing as well. It was an expensive repair job that could have been avoided by a little occasional attention to a couple of grease cups.

WHEN speaking of grease cups, go through the car from start to finish. See to it personally that the grease cups are all actually filled. It is very honorable to trust the garage helper whom you have tipped to do the work, but see to it yourself that the work actually has been done. You are then, and often only then, assured that everything is all right. Sometimes it is good policy to clean out the hard grease that gathers in the top of the grease cups. It has been there for a year or more and is so hard you cannot force it out. Often when getting ready for a long country trip an extra filling of the grease cups is good. Fill them first and screw down until nearly empty or you are sure the lubricant has been forced through the entire bearing; then refill the greasecup and screw down enough to hold it in place.

YOUR magneto has to be oiled every 500 or 1,000 miles. The magnetos generally are so faithful that they are neglected. There are one or two points that must receive attention. Do not overlook them. They do not need much oil. Too much is nearly as injurious as too little. If you give too much it will lead to short-circuits, perhaps, and missing. A few drops is all that is needed. Ask the magneto man about it if he can be reached on the telephone. Go a little further with the magneto: The breaker-box may need brushing out. The points may need cleaning. It is much better to clean these off before you start than to have a disturbing miss in the motor when you get on the road. Give it your attention.

START out with your tires in good condition. If you have an old set which has carried you 4,000 miles or more, there is a probability, almost a certainty, that you will have much trouble. Many experienced car users prefer to buy new tires for the back wheels before starting on a long trip. It is a good way to stiffen your moral courage. Do not start on a long trip without two additional casings and four or five extra inner tubes. See that all of the casings have their flaps in good condition. If they are not you will have tube pinching.

Galveston Beach Meet Next, Then Elgin Road Races

Busy Month Ahead for Speed Merchants

CHICAGO, July 14—Next is Galveston, and following that come the fifth annual Elgin road races. Both promise to bring together the pick of the speed flock and to be credits to their promoters. The Galveston beach meet is scheduled for July 30-31 and August 1-2 and sixteen events are carded for the 4 days, the cash offerings totaling \$4,650, not to mention several valuable trophies.

Preparations for the Elgin road races are being pushed and all indications point to the meet being a great success. The course is being put into the best shape possible and it is thought that the average of 71.5 miles per hour, made last year by Gil Anderson in a Stutz, when he won the Elgin National, will be bettered this year. An extra \$1,000 has been added to the prize fund, making first worth \$2,000 each day, second \$700 and third \$300. Martin Kavanaugh, a member of the Chicago Automobile Club, has hung up \$200 for the fastest lap the first day, while the second day there will be a similar prize given by Harry Vissering, president of the C. A. C.

Never before has the entry outlook been so bright and it would not be surprising if thirty cars went to the tape each day. As the card is arranged, nearly all cars are eligible for both races, for on the first day the limit is 450 inches and on the second it is a free-for-all. At the present time there are sixteen entries actually in, representing eight different cars. This list includes E. J. Schroeder's Peugeot, the driver for which has not been named; Oldfield and Anderson in Stutzes, Grant and Babcock in Sunbeams, E. V. Rickenbacher in a Duesenberg, and Patschke and Heinemann in Charles Erbstein's Marmons.

As good as in are the two Mercers, with Wishart and Pullen as drivers. Ernie Moross has wired that he will start his three Maxwells with Tetzlaff, Carlson and Hughes for drivers, as well as Klein's King, Brock's Ray and d'Alene's Marmon. Bob Burman has agreed to start in his Peugeot, while Mulford is counting on making his bid in the third Peugeot. Alex Sloan is considering starting Hearne and Raimy in Cases, while Finley Porter, who is bringing out a new car, wants to make his racing debut at Elgin with three machines. Duesenberg will make two more entries, W. M. Thompson is figuring on a Burman and a Buick, Frank Fox wants to start the Gray Fox with Wilcox up, while of course Ralph de Palma will be here with either a Mercedes or a Vauxhall. The Braender Bulldog, the Great Western, Moon, White and Chevrolet are other possibilities, while it is likely the National owned by W. Wilson of Rochester, N. Y., will be in with Knipper driving.

One of the three Mercedes that took first, second and third place in the grand

By C. G. Sinsabaugh

prix of France on July 4, probably will be a contender in the next Vanderbilt cup race at San Francisco next spring.

Paul Lacroix, the American agent for the Mercedes, has received instructions from E. J. Schroeder, owner of the Mercedes car which won the two last Vanderbilt cup races, to enter into negotiations with the Mercedes factory to obtain for him one of the grand prix racers, which Mr. Schroeder intends to compete within the next Vanderbilt and grand prix races in California and the next Indianapolis 500-mile race.

It is probable that Ralph de Palma will drive this car in the three events, but if he is not secured, it is most likely that either Lautenschlager, Wagner or Salzer will come over to drive in the races. It is most likely, though, that de Palma will have the mount, for if he can win the 1915 Vanderbilt, that historic cup will go permanently to him, as the deed of gift calls for the trophy being won three consecutive times by the same make of car before it is retired. De Palma in the Mercedes already has won it twice in succession.

OVERLAND WINS AT VISALIA

Visalia, Cal., July 4—Tom McKelvy of Fresno driving an Overland broke the Visalia record of 3 hours, 4 minutes and 56 seconds held by Sprague in a National, made in 1912, and won the 150-mile sanctioned road race in 2 hours, 47 minutes, 53 seconds, equal to 53.6 miles per hour. He was closely pressed by Briscoe of Lindsay in a National, who finished in 2 hours, 49 minutes, 46 seconds. Campbell of Visalia in a Packard was third in 3 hours, 9 minutes, 40 seconds, and was closely followed by Pilletin of Selma in a Ford, who captured fourth place in 3 hours, 10 minutes, 18 seconds. The prizes were \$1,000 first, \$500 second, \$250 third and \$100 fourth.

McKelvy had no trouble, stopping only once, and that for a drink of water. His car ran perfectly, and after taking the lead in the fifth lap, when Campbell in a Packard, who was leading, stopped for tire trouble, never was headed, although Briscoe in a National crowded him every mile.

The cars made forty-eight laps on a 3.15 mile course which was in excellent condition for the race, there being no dust at all and was lined solidly by over 25,000 enthusiastic racing fans and over 5,000 motor cars from all parts of the valley, it being the only sanctioned A. A. A. race in the San Joaquin valley.

No accidents marred the day, the race being ably conducted by the A. A. A. and efficiently guarded by the firemen and special police. It was the sixth road race held in Visalia.

The fastest lap was made by DeVore in a National, making it once around, with four right angle turns in 3 minutes and 14 seconds or at the rate of 61.59 miles per hour. He finished in fifth position. Most of the cars were troubled more or less by tire and engine trouble. One car, the Kaster, driven by Kaster of Sacramento, withdrew before making one lap on account of a sprung axle. Fourteen cars started and nine finished. The cars lined up as follows: Packard, Campbell; Overland, McKelvy; Ford, Pilletin; National, Sprague; Ford, Elliott; National, DeVore; Buick, Lawton; National, Briscoe; Buick, Roemer; Mercer, Pipher; Buick, Lowery; Overland, Watkins; Pope-Hartford, Tesman; Buick, Sulprizio; Kasterkar, Kaster.

CADILLAC WINS COLORADO DERBY

Denver, Colo., July 9—The sweepstakes trophy for the best general average of consistent driving in the first annual all-Colorado motor derby July 3, 4 and 5 was won by Harry W. Swigert, driving a Cadillac car. Point cups for the five separate legs of the 280-mile run from Denver to Colorado Springs, Canon City, Pueblo and return were won respectively by Carl Schwaub in a Cadillac, Swigert, winner of grand prize; A. C. Lee in an Abbott-Detroit, E. H. Bull in a Franklin and Theodore Marx in a Locomobile.

The winning time for the entire course of 280 miles was 14 hours 6 minutes 15 seconds, which was within 9 minutes of the time secretly fixed by the timing committee as the most reasonable for covering the official route; namely, 14 hours 15 minutes.

Other contestants were State Highway Commissioner T. J. Ehrhart in a Cadillac, H. E. Maines in a Chevrolet, F. A. Trinkle in a Detroiter, W. D. Smith in a Studebaker, H. W. McGee in a Cadillac and O. P. Fritchle in a Fritchle electric. The electric made good time over the mountain roads and attracted wide attention.

WISCONSIN TOUR ABANDONED

Milwaukee, Wis., July 13—There will be no revival of the Wisconsin State Automobile Association reliability tour for the Milwaukee Sentinel \$1,000 trophy in 1914, and it looks as if the Badger motoring classic is dead for all time. Officers of the association claim that the A. A. A. will not grant a sanction for a grade 1 tour, nor permit the association to take its own steps to provide a stock car classification and registry. Therefore, for the second time, the 1,000-mile run is abandoned and unless the association makes good in 1915, there is scant hope that there will ever be another dealer's touring contest in Wisconsin, at least not under the W. S. A. A.'s auspices.

English House of Lords Against Price-Cutting

Decision in Dunlop Case—News of the Industry

NEW YORK, July 14—No price-cutting will be allowed in England, according to a cablegram received in this city, which states that the house of lords has rendered a decision in the case of the Dunlop Tire Co. against the Co-Operative Garage and Supply Co.

It appears that the defendant had been selling Dunlop tires under the list prices and the tire company had carried the matter through the courts to maintain its rights to set the price on its products. The Dunlop company's contract with this and all of its other dealers contained the provisions that its tires should not be sold at less than retail price. The house of lords finally has decided that this company has the right to set the price on its goods. The defendant will have to pay \$25 damages for every tire sold under the set price.

As this was in the light of a test case, it is stated that those companies whose contracts contain fixed-price provisions will be upheld in any case wherein the violation of that provision has been made.

ANOTHER HORN SUIT STARTED

New York, July 13—The Lovell-McConnell Mfg. Co. of Newark, N. J., has brought suit for infringement of patent No. 1094403, granted April 21, 1914, to Miller Reese Hutchison. It is understood that the alleged infringements are Newtones and Newton Superiors of models put upon the market since the beginning of the original suit against the maker, the Automobile Supply Mfg. Co. The defendant in the present suit is Julius Bindrim, a Brooklyn dealer in supplies, who sold one of these horns.

CYCLECAR MAKERS MEET

Detroit, Mich., July 11—Active organization work has been inaugurated by the Cyclecar Manufacturers National Association. At a meeting held in Detroit, July 5, F. E. Spooner was elected secretary, succeeding W. B. Stout, and instructed to open an office at 903 Free Press building, Detroit, and to secure an adequate office force to carry out the work. Two vacancies in the board of directors were filled by the election of W. Irving Twombly of the Twombly Motor Corp. of New York and W. M. Lumb of the Flagler Cyclecar Co. of Sheboygan, Mich. The appointment of a contest committee to confer with representatives of the contest board of the Cyclecar Association of America consisting of Malcolm Jones of the Malcolm Cyclecar Co., W. Irving Twombly of the Twombly Motor Corp. and W. C. Lumb of the Flagler Cyclecar Co. was another step taken. The makers at their meeting decided to encourage the promotion of contests of every character including track

racers, hill-climbs, road races and to also encourage every form of touring, pleasure and contest, in every section of the country.

SAGINAW IN DETROIT MEET

Detroit, Mich., July 14—Claim is made by the Valley Boat and Engine Co. that its Saginaw was fifth in the 25-mile race at the light-car and cyclecar meet here on the Fourth, instead of being ranked as an also ran as first reports had it. Summarized, the Saginaw did exceedingly well at this meet with first in the 5-mile class A stock car event, third in the 5-mile class A free-for-all, third in the 2-mile standing start free-for-all and fifth in the 25-mile free-for-all.

MARATHON ELECTRIC MFG. CO.

Wausau, Wis., July 13—The Marathon Electric Mfg. Co. has been organized at Wausau with \$150,000 capital to manufacture electric motors, generators and general electrical equipment of all kinds. Justin Lebovici, until recently electrical engineer for the Westinghouse and Crocker-Wheeler companies, has been appointed general production manager, designer and chief engineer. E. M. Bischoff, formerly in charge of the manufacturing and sales department of the Crocker-Wheeler company, is secretary, treasurer and general manager. The concern is backed by a number of the largest business men and manufacturers of Wausau and Marathon county. The new forest products laboratory built by the government for research and experimental work in pulpwoods by the forestry division of the department of the interior, has been purchased outright with equipment and will be equipped for electrical manufacture. The laboratory was put on the market because the pulpwood work was finished and the government had no further use for the plant.

WILLYS ESTIMATES 1915 OUTPUT

London, July 10—John N. Willys, president of the Willys-Overland Co., in Europe for a long visit, is quoted as saying that he expects to turn 75,000 cars from the factories of his company during the next 12 months. Last year, he said, the company manufactured 45,000 cars. Mr. Willys also stated that the company expects to ship 7,500 cars to Europe next year.

MAY REORGANIZE CUTTING COMPANY

Jackson, Mich., July 10—L. S. Erbes, who recently purchased the good will, stock, repair parts and equipment of the defunct Cutting Motor Car Co., is reported to have decided to transfer the stock of the bankrupt Milwaukee Motor Co., Milwaukee, Wis., to this city and reorganize

the Cutting concern. At present work is being rushed for the building of several hundred light cars to be named the Bull Moose Cuttings, and R. G. Flick, the superintendent of the former Cutting concern is again at his old post. Mr. Erbes also has purchased the plant, patterns, machinery of the Continental Engine Co. of Dallas City, Ill., and will have all the material shipped to Jackson. If the plans of Mr. Erbes turn out right he will also remove his St. Paul, Minn., business to this city.

PLUG DECISION TO FRONTIER

Detroit, Mich., July 11—In the case of the Frontier Specialty Co. against the Heinze Electric Co. for infringement of Simms' patent No. 642,167, final decree has been entered in favor of the complainant. The court held that the patent is good and valid, as is the title of the complainant, and that the defendant infringed claims 1 to 6 inclusive, and the defendant has been enjoined from further infringement of the patent. All question of damages, etc., has been settled.

RECEIVER FOR TIRE CONCERN

St. Louis, Mo., July 9—A suit was filed today by thirteen stockholders of the St. Louis Tire and Rubber Co., asking for a receiver for that company. The complainants claim the reason for the failure of the company is the inability to get the money paid on the capital stock, which is \$150,000, only \$74,200 having been paid in.

The concern was organized a year and a half ago for the manufacture of solid and pneumatic motor car and vehicle tires. According to J. A. Swinehart, one of the promoters of the company, an agreement to take steps to wind up the business of the concern was made at a recent meeting.

NEW OAKLANDS DISPLAYED

Pontiac, Mich., July 13—The Oakland Motor Car Co.'s 1915 models were shown for the first time at the annual meeting of the branch managers of the concern, held here last week. Vice-president Nash told the managers that the company's producing schedule calls for 500 cars during the present month, and fifty cars a day during August. It is expected that at least 12,000 Oaklands will be turned out for 1915 and it is expected that in the next 10 months 40 per cent more cars will be produced than in any 1 year previously. The meeting was handled by Sales Manager Fred Warner.

MAY EXPORTS AND IMPORTS

Washington, D. C., July 15—Special telegram—Ninety-nine commercial cars valued at \$127,024 and 3,157 pleasure cars valued at \$2,857,601 were exported in May,

as against 141 commercial cars valued at \$236,383 and 2,895 pleasure cars valued at \$2,918,806 exported in May a year ago. During the 11 months period ended May 30, the exports were 694 commercial cars valued at \$1,061,354 and 26,324 pleasure cars valued at \$23,522,081 in 1914, and 878 commercial cars valued at \$1,569,750 and 22,254 pleasure cars valued at \$22,252,032 in 1913. Our best customer in May was Canada, which imported 764 cars, value \$941,345. The United Kingdom was second with 663 cars, value \$556,753; British Oceania third with 466 cars valued at \$416,259.

PECULIAR CYCLECAR ACCIDENT

Milwaukee, Wis., July 14—The first cyclecar accident in Milwaukee, and one which is likely to result fatally, occurred Sunday, July 12, on Blue Mound concrete road. The accident has stirred up considerable talk because it appears that it was due to the comparatively low position of the car on the road, and its inability to be readily seen by drivers of large cars under the conditions obtaining at the time of the accident. Blue Mound road presents a line of cars going in and out of Milwaukee each Sunday which is almost impregnable. The driver of the cyclecar turned out from a string of cars and collided head-on with a car coming in the opposite direction. The car behind the cyclecar also turned out and rammed the little car from behind. The cyclecar was crushed like an egg from front and back and the occupants were so badly injured that one or more deaths are expected. The driver of the large car which struck the cyclecar head-on is held blameless. The concrete road is only 18 feet wide, giving just enough room for two large cars to pass comfortably.

ILLINOIS HAS 115,000 CARS

Springfield, Ill., July 13—To date, 115,000 motor car licenses have been issued in Illinois this year, bringing to the treasury \$620,000. Last year, 94,656 licenses were issued with a total revenue of \$507,000. In 1912, the number was 68,012, with receipts of \$375,000. There are more than 17,000 registered chauffeurs in Illinois. Frequently 500 licenses are issued in one day from the office of the secretary of state. The campaign in behalf of licenses and chauffeur examinations has been pushed all over the state, greatly increasing the revenue.

MID-SUMMER SHOW AT LOUISVILLE

Louisville, Ky., July 13—Under the auspices of the Louisville Automobile Club, this city's first annual midsummer motor car show was held last Thursday at Fountain Ferry park. Twenty exhibitors were represented in the display, which included gasoline pleasure cars, trucks and electrics. Many dealers handling some of the leading makes were unable to enter the exhibition because of their inability to secure models from their factories at this time, it

was announced. Optimism was in evidence everywhere among the dealers and indications point to a splendid season next year.

According to the majority of the dealers, business is much better than it was at this time in 1913, the principal complaint of the agents being that they cannot secure a sufficient number of cars from manufacturers. Local distributors are doing the bulk of their business out in the state, where the farmers and people living in small towns are purchasing cars in greater numbers than ever before. There seems to be the greatest demand for the machine selling in the neighborhood of \$1,000, and the small cars listed under \$700 also have made great strides.

The midsummer show was staged in connection with a membership campaign being conducted by the Louisville Automobile Club. Fountain Ferry, where the exhibition was held, is an amusement park.

LOOKING BEFORE THEY LEAP

Washington, D. C., July 11—At a joint meeting of delegates from the board of trade and chamber of commerce it was decided that before Washington motorists contribute \$10,000 or any part of that sum to the completion of the proposed Washington-Mount Vernon boulevard, they will seek to learn whether or not it will be necessary for them to purchase a Virginia license to travel over it. Every real estate owner along that portion of the road between this city and Alexandria will be consulted in the matter and the board of regents of Mount Vernon will be asked whether or not they can contribute to the cost of building or maintaining the proposed highway. Committees will be appointed to take up these various questions. While it is confidently believed the boulevard will be built in the near future, it is just a question of going about it in a business-like manner. Such a highway would give motorists ready access to Mount Vernon, where George Washington is buried.

BAY STATE REGISTRATIONS

Boston, Mass., July 11—The best argument against pessimism relative to the motor industry is shown by the fact that in 6 months of 1914 more than 2,000 motor cars have been registered in Massachusetts than during the entire 12 months of 1913, and the latter was a very good year, too. Also in the 6 months the Bay state has collected \$16,201.18 more from car owners than it has in the entire 12 months of the preceding year. If the rate of increase keeps up more than 75,000 motor cars and trucks will be listed this year. The revenue will total more than \$1,000,000. Also at the present rate approximately 100,000 will be operators of machines, or one in every thirty-five inhabitants.

Comparisons between the first 6 months of 1913 and a similar period of 1914, and also between the entire 1913 period and the first 6 months of 1914 show some interest-

ing figures. There is not an increase in the operators and chauffeurs because each one gets a license that runs for 12 months, and so the renewals cover all parts of the year, they being renewed every day. But there is an increase for the first 6 months this year over the first 6 months last year in all departments except chauffeurs, the decrease there denoting that more people are driving their own cars.

STUDEBAKER FINISHES TEST

Buffalo, N. Y., July 11—The Studebaker six has finished its series of five 200-mile trips. The fifth and final 200-mile run was run under most unfavorable conditions. Roads were wet and detours many. It averaged 15.2 gallons per mile and used 2 quarts of oil and 2 quarts of water. It used 13¼ gallons of gasoline for the trip.

The actual cost of operating the car, carrying six passengers, is \$0.0103 a mile. This figure is given on the basis of 1,000 miles of actual road travel, the total gasoline, oil and water cost for the 1,000 miles being added and divided into the total distance traveled. The following tabulation gives the complete data on the five runs:

Distance, Miles	Gasoline, Gallons	Oil, Quarts	Water, Quarts
206.7	13¼	2	3
189	12¼	1½	½
200.6	12½	2	1
200.6	13¼	2	2

Average mileage per gallon of gasoline, 15.15 miles.

Average mileage per gallon of oil, 421 miles.
Average mileage per gallon of water, 470 miles.

CONTEST BOARD RULINGS

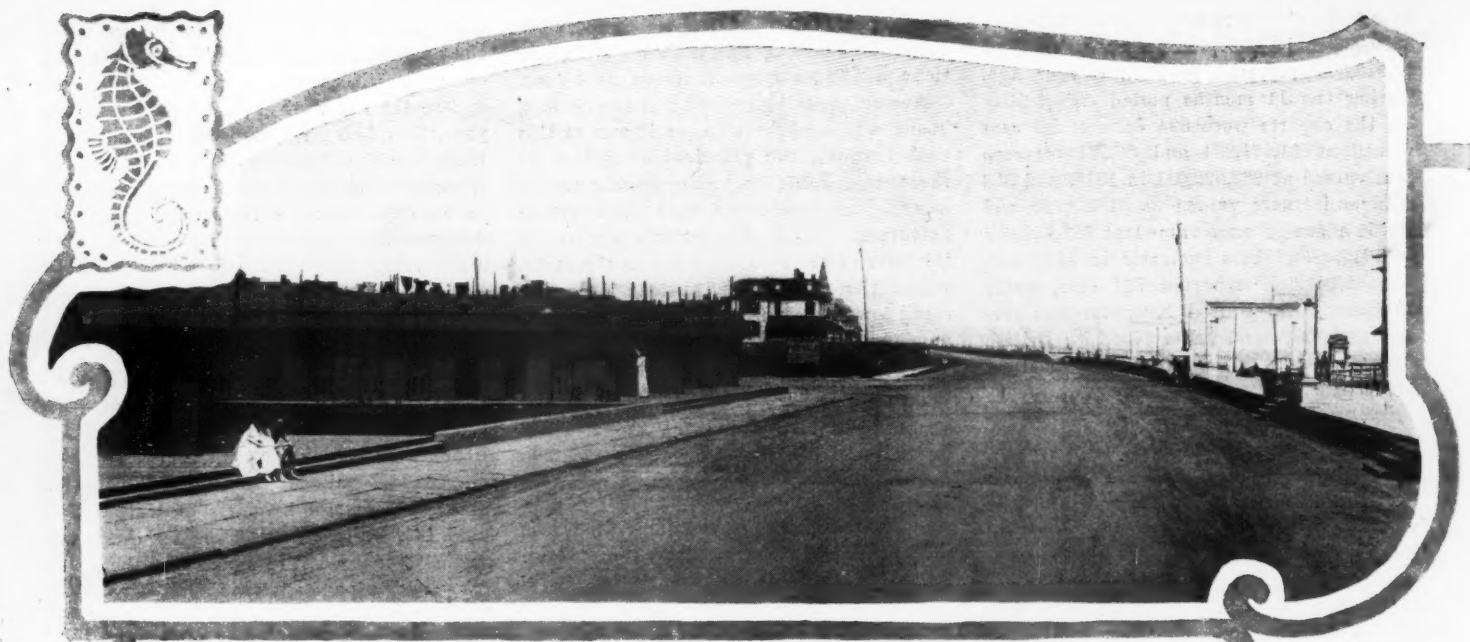
New York, July 10—At today's meeting of the contest board of the American Automobile Association, Clifford Ireland, of Peoria, Ill., was appointed representative of the contest board for the state of Illinois.

Omar Taft was suspended by the board until January 1, 1916, for his connection with the entry of a Delage car and its failure to take part in the recent Santa Monica road races.

The Detroit track, on which the recent cyclecar meet was held July 4, was suspended until January, 1915, this being a licensed track under the A. A. A. The suspension was for issuing a sanction to the cyclecar organization which sanctioned the meet.

DECREE FAVORS WEED COMPANY

New York, July 13—In the case of the Parsons Non-Skid Co. and the Weed Chain Tire Grip Co. against the Leather Tire Goods Co., Inc., Judge Hand has signed an order taking the bill of complaint pro confesso. The motion was made by Frederick S. Duncan, attorney for the complainants, that the bill be taken pro confesso and as no answer had been filed by the defendant, as more than 20 days had elapsed since the serving of the subpoena, the court ordered that the bill be taken pro confesso, "and that after the expiration of 30 days after the entry of this order a final decree may be entered herein."



Cape May Through the Motorist's Goggles

By J. C. Burton

THERE'S a lullaby lilt in the swish of the waves
That roll over the sands of Cape May;
And Czar Labor is abject, a tyrant sans slaves,
On the beach where Abandon holds sway:
There the sea breath refreshes, the skies are rare
blue,
And the sun has no torturing glare;
With each hour the pleasures of life fast accrue
And you're glad, mighty glad, that you're there.

In the mist-mantled offing where fishing smacks lie,
War galleons their anchors once cast;
There the Dutch, Swede and Briton their banners
flung high
In the days of conquest that are past:
Once the Algonquin campfires glowed red on the
beach
Where the bathers are lolling today—
For the booming of cannon, the redskin's death-
screach,
Are faint echoes of old-time Cape May.

❁ ❁ ❁



From the land of the Norse came Cornelius Mey,
A crusader on uncharted seas,
A descendant of Vikings whose ship was the prey
Of the storms and the sail-ripping breeze;
Though he sought new world empire, he found
barren land,
A vast waste that seemed scarce worth the claim,
Just a cape most prolific of Indians and sand,
And begrudgingly gave it his name.

Upper illustration—Boardwalk and motor drive along the sea-
shore at Cape May.
Lower illustration—Typical summer residence at Cape May.

Upper illustration—The Hotel Lafayette at Cape May, built before the Civil war.

Lower illustration—Cape May's Broadway, the main street of the New Jersey resort.

For two cent'ries and more has Cornelius slept
And he now is a ghost filled with pride,
For the finger of land that he named has been
swept

By an on-rushing history's tide;
On the sands of the beach Father Time bowed the
knee

To Cedrino, Ford and Chevrolet,
And there Distance surrendered to Velocity
In the motor trials held on Cape May.



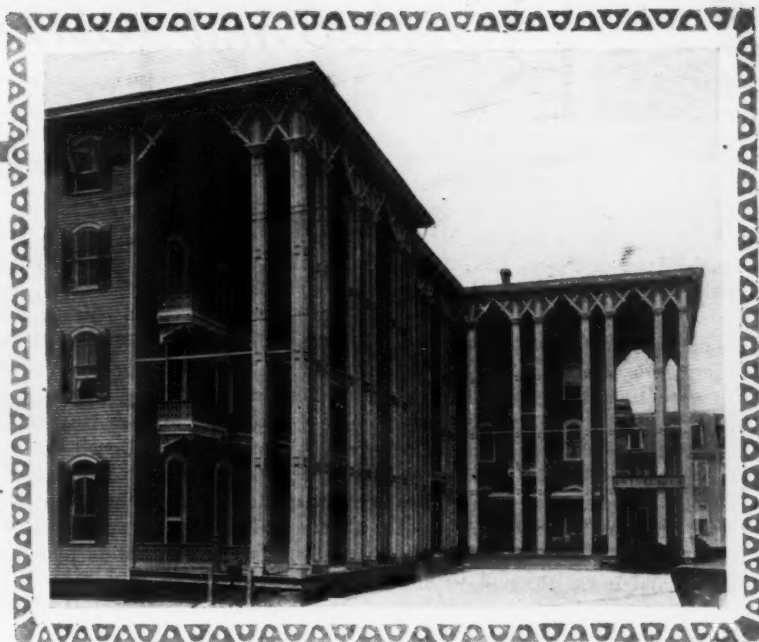
Like a proud old aristocrat, paupered, alone,
Stands the stately Hotel Lafayette,
Where each balcony served years ago as a throne
For some blushing, hoop-skirted coquette;
On the pillared veranda when night shadows fall
Lurk the phantoms of old-time romance,
And the echoes of Time that are heard in the hall
Are weird music to which mem'ries dance.

As you walk down the streets of the drowsy old
town—

They're as narrow as lanes in Cape May—
You forget the skyscrapers with windows that
frown

On the throngs of chaotic Broadway:
You're at peace with the world and with joy you are
gorged,

You've escaped from the big city's snare;
You have broken the fetters which Ambition forged
And which bound you to sleep-sapping Care.





Routes and Touring Information



Alabama Family Makes Long Tour in a Ford

THERE drove into Chicago recently a happy family of five: Mr. and Mrs. F. L. Nichols, of Foley, Ala., and their three children, aged 9, 10 and 14 years, who, with the family cat for mascot and 200 pounds of luggage for good measure, were completing the last lap of an 1,800-mile journey in a Ford from Mobile, Ala., to Aurora, Ill.

"Until we decided to make this trip," said Mrs. Nichols, "neither my husband nor I knew anything about a car. However, we bought our Ford, a second-hand one that already had traveled over 6,000 miles, and came through without trouble or mishap.

No Specific Route Followed

"The journey was a go-as-you-please one. We followed no specific route, nor did we go after any speed or endurance records. We knew we wanted to finish at Aurora, with a stop at Chicago. With that objective point in mind, when we en-

tered a town we hunted for the sign of the winged pyramid, where we inquired our way to the next place. Traveling in this leisurely manner, with occasionally stop-overs, the journey took 14 days; 11½ days' actual running time.

"Some of the roads over which we drove in the southern states we were told never before had been traversed by a motor car, and we could well believe this. In one place we actually had to get out, chop saplings and corduroy a strip over the sticky blue clay. However, this was all in the game and we didn't have any one kind of travel long enough for it to grow monotonous. Sometimes it would be a smooth, straight way. Again, when crossing the mountains, would come an upgrade of 5 or 6 miles; then with engine shut off and service and emergency brakes ready for instant action—zing, down we would coast on the other side.

"Once, in Alabama, we traversed 150

miles of logging roads and were glad when we struck the smooth toll roads of Tennessee. In Kentucky many of the roads were stone and the going was good from there on until we reached Illinois. In that state road conditions were fair only, occasionally verging to poor. In northern Alabama we forded several streams that were deep enough to flood our engine. To get across we had to back for a running start and go through on the car's momentum. Once on the opposite bank we would crank up and resume our journey, our Ford none the worse for its ducking.

Trip an Enjoyable One

"Among the interesting features of our trip were a day and a night spent in the Blue Ridge mountains of Virginia, another in the moonshine district and one in the tobacco belt of Tennessee. The trip, undertaken primarily to promote the health of one of the family, was a success throughout."

Answers to Route Inquiries from Motor Age Readers

Idabel, Okla.—Kansas City, Mo.

IDABEL, Okla.—Editor Motor Age—I have just finished a 900-mile trip through Texas and am now figuring on a trip to Kansas City. I would like to know something of the best route to travel. I can get from here to Horatio, Ark., and think the road from there to Mena, Ark., is good but have no information from there on.—G. A. Spaulding.

From Mena to Fort Smith the routing should be made through Boles, Waldron, Mansfield, Huntington, Greenwood then continued through to Fayetteville, Springdale, Rogers, Bentonville, Centerton, Gravette, on through Missouri to Joplin through Pineville, Neosho, and Diamondville.

From Joplin it is 181 miles to Kansas City probably the best route lying through Peculiar, Harrisonville, Archie, Adrian, Butler, Rich Hill, Arthur, Nevada, Sheldon, Lamar, Boston, Jasper and Carthage.

Adrian, Mich.—Lookout Mountain

JASPER, Mich.—Editor Motor Age—What is the shortest route from Adrian, Mich., to Lookout Mountain, Tenn., by way of Mammoth Cave, Ky., giving distance?—J. B. Green.

Adrian to Lima is 92 miles traversing a good gravel road through Jasper, Seward, Lyons, Wauseon, Napoleon, Malinta, Hamler, Leipsic, Ottawa and Columbus Grove. The 130 miles to Cincinnati over gravel or macadam is a routing through Cridersville, Wapakoneta, Anna, Sidney, Piqua, Troy, Vandalia, Chambersburg, Dayton, Alexanderville, Miamisburg, Franklin, Middletown, Hamilton, Mt. Healthy.

Closely following the Ohio river part of the way, the distance is 136 miles over good stone and gravel roads passing through Mack, Cleves, Homestead, Lawrenceburg, Aurora, Oberdeen, Markland, Vevay, Carrollton, New Castle, Shelbyville, Middletown, St. Matthews.

A run of 113 miles to Mammoth Cave over a greatly improved road is that to Ashville, Mt. Washington, Smithville, High Grove, Bardstown, New Haven, Buffalo, Pikeview, Canmer,

Hardyville, Bear Wallow, Cave City. The Lincoln farm is only about 2 miles from Buffalo and easily reached.

Many bad rough stretches will be found on the road to Nashville, 113 miles, going through Cave City, Glasgow, Bruce, Cedar Springs, Scottsville, Sugar Grove, Westmoreland, Sideview, Gallatin, Avondale, Hendersonville and Edenwold. Out from Nashville the Lebanon pike is utilized, passing the Hermitage, the old home of Andrew Jackson, to Laverne, Murfreesboro, Beech Grove, Manchester, Hillsboro, Pelham, Monteagle, Assembly College, Tracy, Sequatchie, Jasper, Rankins ferry across the Tennessee river to Chattanooga.

Chicago—Three Lakes, Wis.

CHICAGO—Editor Motor Age—Kindly outline a route giving road conditions to Three Lakes, Wis.—E. F. Mitchell.

The Lake Geneva short route, 76 miles, is via Evanston, Wilmette, Kenilworth, Glencoe, Highland Park, Half Day, Diamond Lake, McHenry and Richmond. Mostly a gravel road extends to Fond du Lac, 15 miles, and passes through Elkhorn, Lauderdale Lakes, Eagle, Oconomowoc, Monterey, Iron Ridge, Mayville, Theresa and Byron.

To Stevens Point, 79 miles, travel through Medina, Redfield, Fremont, Weyauwega, Wau-paca, Amherst, the first part to Fremont being over gravel roads, but a few sandy spots on the latter.

A fair sand road of 50 miles leads through Knowlton, Flanner, Wausau to Merrill, then Dudley, Parrish and Rhinelander will finish the trip. This latter part of the trip is not familiar to Motor Age.

Stamps, Ark.—La Porte, Tex.

STAMPS, Ark.—Editor Motor Age—Please advise the best route to La Porte, Tex. Should the routing be via Texarkana or Shreveport?—H. Cahe.

The routing should be via Dallas and Texarkana. It is 280 miles north to Dallas, the road leading through Willis, New

Waverly, Huntsville, Madisonville, Leona, Centerville, Jewett, Donie, Teague, Mexia, Wortham, Corsicana, Waxahachie, and Lisbon, then turn east towards Texarkana, which is a distance of 219 miles. This is a natural road, but bad in wet weather, and passes through Richardson, McKinney, Sherman, Anna, Vandalia, Pilot Grove, White-wright, Bonham, Dodd City, Windom, Honey Grove, Petty, Brookston, Paris, Sylvan, Blossom, Starksville, Detroit, Clarksville, Annona, Avery, Oak Grove, DeKalb, New Boston and Leary.

Galveston, Tex.—Milwaukee, Wis.

GALVESTON, Tex.—Editor Motor Age—I am expecting to tour to Milwaukee, Wis., the first of August and would like directions, also mileage.—H. Wilson.

It is advisable to secure a Blue Book and have the entire running directions. Volumes 5 and 4 would be necessary to have complete running directions.

The first day you could make Madisonville, 151 miles by way of Lamarque, League City, Houston, Conroe, Willis, New Waverly, Elmira, Huntsville; then Dallas, 179 miles, via Leona, Centerville, Jewett, Donie, Teague, Mexia, Wortham, Corsicana, Waxahachie and Lancaster.

At Denison, reached through McKinney, Mellisa, Anna, Van Alstyne, Howe and Sherman, you cross the Red river into Oklahoma and route 196 miles to Oklahoma City, passing through Milburn, Reagan, Mill Creek, Sulphur, Davis, Wynnewood, Purcell, Lexington, Noble, Norman and Moore.

The 137 miles to Arkansas City is via Edmond, Guthrie, Mulhall, Perry, Newkirk; to Emporia, 136 miles, via Winfield, Douglas, Augusta, Eldorado, Burns, Florence, Clements, Elmdale, Cottonwood Falls and Saffordville; to Kansas City, 134 miles, through Waverly, Williamsburg, Ottawa, Edgerton, Olathe, Martin City and Westmoreland.

The Inter-State trail extends to Des Moines, routing through Smithville, Edgerton, Dear-

born, Halleck, St. Joseph, Union Star, King City, Ford City, Albany, New Hampton, Bethany, Eagleville, Lamoni, Leon, Osceola, Medora, Indianola, Somerset. The balance of the routing through Iowa is Mitchellville, Colfax, Newton, Kellogg, Grinnell, Brooklyn, Ladora, Marengo, Walford, Cedar Rapids, Marion, Mt. Vernon, Mechanicsville, Clarence, Lowden, Wheatland, DeWitt and Clinton. Clinton to Dixon is 43 miles through Fulton, Morrison, Sterling and at 97 miles further Lake Geneva is passed through by turning north through Oregon, Byron, Rockford, Cherry Valley, Belvidere, Harvard, Walworth and Fontana.

Lake Geneva to Milwaukee is a good gravel road of 51 miles and reached through Springfield, East Troy, Mukwonago, Waukesha and Brookfield.

Maine Highway Improvements

Portland, Me.—Editor Motor Age—Reports are being circulated throughout the country that owing to the fact that so much road construction is being carried on all over Maine it is inadvisable for motorists to visit the state this summer. The Maine Automobile Association, however, wishes it understood that this report is incorrect. It is true that hundreds of miles of splendid new road are being built throughout the state, but this work in no way interferes with traffic. This is due to the fact that the Maine Automobile Association, working in conjunction with the state highway department, has laid out excellent detours around all of the work in progress and these have been plainly marked with special signs from end to end. In addition complete running directions have been prepared covering the detours and this information is now being posted and sent out throughout the country and will be mailed to anyone applying to the M. A. A. touring information bureau, 12 Monument square, Portland, Me.

One of the most noteworthy facts about the detours which have been laid out is that in almost every case they are as good as the roads being rebuilt ever have been in the past and in many cases are very much better.

Some of the important road work now being carried on by the state highway department throughout Maine includes the construction of the uncompleted links in the highway between Portsmouth, N. H., and Portland, Me.; the rebuilding of the worst section of the road between the New Hampshire line at Fryeburg and Bridgton; the reconstruction of several miles of poor road on the important Lewiston and Augusta highway between Greene and Winthrop; and the building of several miles of fine new road on the shore line between Portland and Rockland. This last work includes the construction of a splendid bituminous macadam road between Portland and Brunswick, and which later will be continued on to Bath, this work being done jointly by the state of Maine and the federal government. Other work along this route includes long stretches between Woolwich and Wiscasset, as well as through Waldoboro.

Similar road building will be carried on this summer between Farmington and Rangle; between Norridgewock and Madison; between Newport and Bangor through Etna; between East Machias and Dennysville, in the town of Whiting; through the town of Northport on the Rockland and Bangor shore road; on the main route of travel into Aroostook county between Island Falls and Houlton; and in many other places. These stretches of work will each average from about 5 to 9 miles in length and when completed will cover practically all of the bad sections of the state trunk railways.

The detours have been so laid out that they go nowhere near the work in progress and therefore tourists will not be obliged to plough through any road that is being dug up and rebuilt; on the contrary, they will not even be given the opportunity of getting a glimpse

Eastern Road Conditions; Speed Traps

FOR the benefit of motorists in the west who are planning eastern tours the following information relative to road conditions and traps are furnished from the A. L. A. headquarters of Boston:

ROAD CONDITIONS

Maine—All roads in the towns of Eden, Tremont and Southwest Harbor are open to motor cars, but all roads in the town of Mt. Desert are closed to motor cars except one road through Northwest Port to the town of Tremont and Southwest Harbor.

New Hampshire—The road from Ponemah, N. H., to Milford, N. H., on the main line between Nashua and Keene is under repairs. At South Merrimac bear right at public square in Amherst, where turn left to Milford. We are informed that the road between Portsmouth and Portland is now passable and some prefer at York Village to bear left rather than to go around by the Beach road. The roads in the White mountain section of New Hampshire and Vermont are reported to be in fairly good condition, and while they are being improved in places, they are generally passable.

Massachusetts—The road between Amherst and Sunderland is torn up for about 1 mile. In going north detour at the four corners just beyond North Amherst, and in going south detour at the second road to the right from Sunderland, then turn east at what is known as the creek bridge.

The road beyond South Deerfield going north is also being repaired.

The road between Hadley and Northampton bridge is being rebuilt and Main street in Northampton is all torn up to be made over.

The road between South Hadley and Amherst through what is known as the Notch is being made into a state road and will be closed for some time.

The road from Williamsburg to Chesterfield will be torn up all summer. Make local inquiries at Goshen.

The road over Jacobs Ladder between Chester and Lee is now considerably improved and passable.

On Lithia Hill between Goshen and Swift River, between Swift River and Cummington, and between East Windsor and Windsor, roads are under construction but passable with some difficulty. It is reported that this work will continue practically all summer.

Until the Wellington bridge is repaired, the shortest route from Boston is to go out Washington street through Charlestown, following the elevated structure to Sullivan square, where turn right following trolley into Broadway, which crosses the Revere Beach Reservation.

Another way which some prefer is to go out to Cambridge, turn right on Columbia street—opposite the fire station on left—left on

Broadway, right on Prospect street, then left through Union square, turning next right over Walnut street, cross Broadway—double trolley—entering the Revere Beach Reservation, turn first left to Medford square, where turn sharp right on Riverside avenue.

SPEED TRAPS

Maine—Street traffic regulations similar to those passed by other New England states have gone into effect in Auburn, Me., and it is reported that the police will enforce these regulations strictly.

New Hampshire—The police of Nashua have been aroused by public sentiment to put a stop to overspeeding through that city, and great care must be used to avoid trouble.

The speed limit in all New Hampshire cities and thickly settled sections is 15 miles an hour.

The police of Concord are arresting non-resident motorists for overspeeding and compelling them to deposit bail or remain in jail. The speed limit in the state of New Hampshire is 15 miles in thickly settled sections.

The police of Manchester, N. H., mounted on motorcycles, are enforcing the speed limit strictly, and already several have been prosecuted.

City Marshal Reeves is arresting motorists for overspeeding and for failure to observe local regulations requiring all motorists to make a wide turn to the left and a short turn to the right similar to street traffic regulations in force in other cities.

Massachusetts—The police of Cambridge are prosecuting motorists for not having their rear lamp lighted, and for failure to slow down and give a signal at intersecting streets between Harvard square and Porter's station on Massachusetts avenue.

Owing to several very serious, and some fatal, accidents which have happened recently in Stoneham square, the police are prosecuting motorists for traveling faster than 15 miles an hour in that section.

The police of Andover are arresting motorists for not slowing down to 8 miles an hour and blowing horn at the intersection of streets where the view is obstructed. Several have already been prosecuted and the police claim they will continue to enforce the law throughout the season.

Rhode Island—The police of Apponaug are prosecuting motorists for speeding in the center of the town, and East Greenwich. The limit through the town of Apponaug, as in very thickly settled sections of Rhode Island, is 15 miles an hour.

Connecticut—An ordinance has been passed preventing any person from using searchlights which will dazzle or blind other users of the highways, squares and parts in the city of Hartford. Several non-residents have already been prosecuted for a violation of this ordinance.

of the work that is being done. Much of this construction will be completed at an early date and in every case sections of the road being rebuilt will be opened as fast as completed.

Work is now in progress by the state highway department on the main highway leading from the White mountain resorts through North Conway, N. H., and Fryeburg, Maine, to Bridgton, Portland and Poland Spring. The work has been started at the New Hampshire line, just west of Fryeburg, and is being carried on toward Bridgton, through Fryeburg Village, about 7 miles of splendid new highway is being constructed. While this work is in progress, motor traffic should take the detours laid out by the Maine Automobile Association, working in conjunction with the state highway department, and which have been plainly signed for their entire distance. The Naples-Fryeburg detour is 27.4 miles and

passes through Sandy Creek, East Denmark, Denmark, East Brownfield to Fryeburg. This is the point at which the detour route returns to the main highway. For North Conway, N. H., and White mountains, turn sharp left. For Bethel and Lake Kezar points, turn sharp right.—Maine Automobile Association.

Sioux Falls, S. D.—Minneapolis, Minn.

Sioux Falls, S. D.—Editor Motor Age—I should like the routing to Minneapolis, Minn., as we wish to make the trip the last of this month.—F. E. Mannix.

Travel east 160 miles to Algona over good roads through Rock Valley, Hull, Sheldon, Sanborn, Hartley, Spencer, Dickson, Ruthven, Emmetsburg, and Whittemore then north 171 miles through Bancroft, Blue Earth, Winnebago, Garden City, Mankato, Kasota, St. Peter, Ottawa, Le Sueur, Belleplaine, Jordan, and Shokopee.



The Readers' Clearing House



Crossing Signal Suggestion—Semaphore Operated by Policeman

ST. LOUIS, MO.—Editor *Motor Age*—The protection of life and limb from accident in congested street traffic centers is daily becoming a more serious problem. How to protect both pedestrians and the drivers themselves from the results of carelessness or mad hurry, without unduly interfering with or hampering business, has taxed the ingenuity of some of the master minds among our legislators, not only here in St. Louis, but in all large cities. It has evolved the traffic policeman, whose duties are not only exceedingly onerous, but extremely dangerous, for traffic policemen, arrayed in all the pomp and panoply of blue coat and brass buttons, are only human, subject to all the ills which afflict humanity, and under present conditions, exposed as they are, to all the changes in the weather, and subjected to the unusual exercise of converting themselves into human semaphores, it is not to be wondered at if occasionally they become somewhat lax in their vigilance when tired nature calls for a respite from the continuous strain.

To surmount this difficulty and afford a far greater measure of protection to the traveling public, I have invented a device by means of which the guardians of the traffic will not only be protected from the weather, but relieved of the strain of extending their arms, and, removed from the direct center of traffic, they will be better able to devote their undivided attention to regulating it.

The device, while exceedingly simple in construction and by no means expensive, will be found to be much more effective than the present method of regulating traffic and should strongly appeal to all who have the best interests of the community at heart. It consists of an overhead signal or semaphore, operated by a traffic officer who is removed from the direct path of traffic and stationed in or under a shelter house, which is slightly elevated, on the street corner, as shown in Fig. 1. He can observe and direct the movements of traffic by operating the signal device and signal bells. He is out of the danger zone himself and can devote all his thought and energy to minimizing the risk of others. The signal should be suspended from a cable attached to poles located on diagonal corners, and in plain view of pedestrians and vehicle drivers for a long distance.

The signal consists of four semaphore blades, each about thirty-six inches long, constructed similarly to an electric ceiling fan, two of the blades being colored red, signifying "Danger" or "Stop," while the other two will be colored white, and will signify "Clear" or "Go Ahead." To render the signals effective by night, electric lamps are provided for the semaphores, the colors being in accord with the colors of the semaphore blades. The signal is moved 90 degrees in both directions, the attention of the public being called to the change by an electric bell, which is situated on the pole where the traffic guardian is standing.

When the signal is not in use as a guide to traffic, the semaphores may be placed diagonally, which would be an indication that the traffic guardian is absent and traffic could proceed under its own control.—H. D. Heuer.

SUGGESTS ELECTRIC LIFTING JACK

Pittsburgh Reader Offers Design and Many Suggestions

PITTSBURGH, Pa.—Editor *Motor Age*—The practically universal use of electric systems on the motor car furnishes a supply of electricity which may be used for the operation of other accessories. Automatic tire pumps, demountable rims and other labor-saving devices have eliminated all forms of manual labor connected with the running of the car, save the use of the jack. To jack up a heavy touring car requires more strength than most women and some men possess, as the handle of the jack is usually short and in an awkward position to operate. Also, the operation of

the jack frequently involves the cleaning of the dirtiest part of the car with the motorist's best clothes. Assuming that a car weighs 4,000 pounds, which is much more than the average weight, then the weight per wheel will be approximately 1,000 pounds, which must be lifted about 4 inches in 6 seconds, which is far quicker than it can be done by hand, especially if there is snow or mud on the road. If the efficiency of the motor is 50 per cent, then about 25 amperes will be required at 6 volts. As the jack would only be operated

starter, which usually consumes several hundred amperes.

An electric jack would be as valuable in the garage as on the road, especially in a public garage, where many wheels are jacked up for the application of tire chains and for other work on the tires and wheels.

The motor should be straight series wound, so that it would run fast until the ram actually started to lift the car, and then it would have a strong pulling power at a lower speed. Using a worm gear, as shown in Fig. 2, would make the jack irreversible, so that it would not run down when the current was shut off. The switch should be attached to the flexible cable, several feet from the jack, thus making it more convenient to operate, and the attachment plug could fit into the spare socket in the dash, which is generally provided for the attachment of the trouble lamp.—Murray Fahnestock.

MOTOR HAS AUTOMATIC VALVES

Spring Tension Determined by Piston Suction—Lift Necessary

Greencastle, Ind.—Editor *Motor Age*—How much opening should a valve have, and how much tension should there be on the spring with a motor having $3\frac{1}{2}$ by $3\frac{1}{2}$ -inch cylinders, $\frac{7}{8}$ -inch automatic intake valves?

2—Should the spring be a stiff one under small compression, or a nimble spring under heavy compression to give best results?—Ewing McLean.

1—A $\frac{3}{8}$ -inch lift would be fair for such a motor. You will have to experiment to find the proper spring tension, as much depends upon the suction of the pistons.

2—The stiffness of the spring will be found only by experiment. As the piston descends it creates a vacuum in the cylinder, thus allowing the pressure of the atmosphere to open the valve. If the piston suction is poor, then the difference in

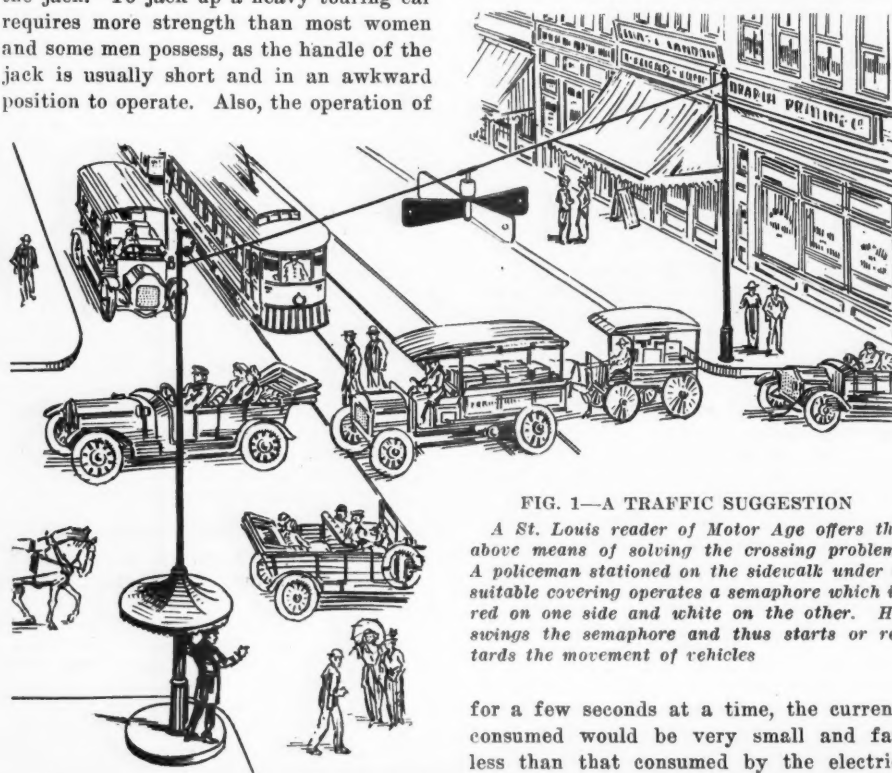


FIG. 1—A TRAFFIC SUGGESTION

A St. Louis reader of *Motor Age* offers the above means of solving the crossing problem. A policeman stationed on the sidewalk under a suitable covering operates a semaphore which is red on one side and white on the other. He swings the semaphore and thus starts or retards the movement of vehicles

for a few seconds at a time, the current consumed would be very small and far less than that consumed by the electric

pressure between the bottom and the top of the valve will not be so great and hence the valve will have a tendency to remain shut. However, if a piston has good suction the valve will open without difficulty. You will have to try your particular motor and valves in order to get the best results.

PLACING MOTOMETER ON RADIATOR

How It Is Done When Cap Is Made of Hard Rubber

Portland, Ore.—Editor Motor Age—Kindly explain how to put a Boyce motometer on a car with a hard rubber filler cap. It will be necessary for a hole to be drilled through it, and I would like to do it without cracking the rubber cap.

2—Kindly tell me what speedometer gears should be put on a Stewart 75-mile speedometer when changing front tires from 34 by 4 to 35 by 4½-inch. It was accurate with 34 by 4 tires on the front, but is not accurate now with 35 by 4½ tires. How many teeth are there, and how will I know if I am given the right gears?—F. Strong.

1—In order to drill through the hard rubber filler cap, the cap must first be softened slightly. This is done by placing it in boiling water and permitting it to remain there for about 3 to 8 minutes. After being removed from the water it can be drilled without fear of cracking.

2—The wheel or driving gear used in connection with Stewart speedometers always have twice as many teeth as there are inches in the wheel diameter. Thus, a 34-inch wheel would use a gear with 68 teeth. The driven gear in all cases is the same. In your case you could use the old driven or shaft gear and get a new wheel gear with 70 teeth.

WANTS TO CHARGE OWN BATTERY

Lamps in Resistance Bank Depend on Charging Rate

Rockdale, Tex.—Editor Motor Age—I have a 125-volt 7-ampere D. C. generator and would like to know how many 16-candlepower lights should be burned to charge one or two storage batteries which are used for starting and lighting the car.

2—I have a coil which is supposed to remagnetize magneto poles, but have not had any success with it. I would like to know what kind of an outfit a man can successfully remagnetize magneto magnets with.—A Reader.

1—The number of lamps to be used in the bank depends upon the charging rate of the battery. If, for example, the charging rate is 5 amperes then a sufficient number

of lamps must be placed in the circuit to consume 5 amperes. The average 125-volt carbon lamp will take a little more than ½ ampere so for a 5 ampere charging rate you would need 10 such lamps in parallel. You must know the consumption of each lamp before you rig up the bank.

2—Magnets may be remagnetized successfully with an electromagnet, and in nearly every good repair shop and service station such a device will be found. The construction and operation of an electromagnet was described and illustrated in Motor Age issue of February 5, page 30. Perhaps you are not doing the work properly. If you will advise Motor Age as to the method you are using perhaps the difficulty may be found.

WISHES TO CHANGE GEAR RATIO

New Pinion or Ring Gear Needed—Would Give More Speed.

Chicago—Editor Motor Age—Would it be advisable to change the gear ratios in the rear axle in order to convert a model 79-TE Overland into a speedster? It is now geared in the rear axle on direct drive, 3¼ to 1. Could a ratio of 2 to 1 or 2½ to 1 be put in? If so, should the pinion be enlarged or the bevel decreased in size?

2—How many teeth are needed for a 2 to 1 and 2½ to 1 ratio?

3—Where could this gear be obtained?

4—In this make of car, is the gearbox and differential connected so that the grease from the gearbox flows into the differential? Grease has been put in the gearbox several times, but never any in the differential. It is thought that the grease flowed back to the differential from the gearbox.

5—How far should this car run on a pint of engine oil?

Is Polarine too thin to use for this make of motor? If so, what oil should be used?—C. Forthof.

1—If you cannot get sufficient speed out of the car now, altering the gear ratio will help. The only change necessary to make the ratio 2 or 2½ to 1 is to change the driving pinion or the ring gear. Change the gear which is cheapest.

2—The gears should be such that there are twice as many teeth on the large gear as there are on the small gear, in order to get a 2 to 1 ratio. For a 2½ to 1 there should be 2½ times as many teeth on the large gear as there are on the small one. The ratio may be obtained with an infinite number of combinations. The size of the gearcase will determine the size of the gears and then the shape and distance between teeth must be found to get the number of teeth needed.

3—The Willys-Overland Co., Toledo, O., will undoubtedly be able to supply you.

4—It is not supposed to flow back into the differential housing. The pinion bearing evidently is leaking.

5—About 50 to 75 miles.

6—Polarine should give good results. The Overland company does not specify any particular make for their motor. Perhaps some reader has found some oil especially valuable.

A Polish for Enameled Parts

Chicago—Editor Motor Age—Kindly give a formula for a body polish.—A Reader.

A very good polish for enameled body parts is made of the following ingredients: 3 ounces of centronella, 1 pint of paraf-

fine oil, 1 gallon turpentine, 1½ ounces oil of cedar. These should be mixed in the proportions named and applied to the parts with a cotton cloth. After applying rub the parts well with another clean cloth. This gives an excellent gloss and the more it is rubbed the higher will be the polish.

SYSTEM WHICH HAS TWO BATTERIES

One for Ignition and Other for Lighting on 1912 Cole Car

Baileyville, Ill.—Editor Motor Age—I have a 1912 Cole car which has a Ward-Leonard lighting system. Why is it that it must have two batteries where some other machines only have one?

2—Is there any danger of overcharging the battery, as I do not use the lights much the batteries are up to eight volts?

3—I have a Bosch coil and it does not buzz when it is on battery unless I press the little button in the center of the coil. How can it be adjusted, or is there something else wrong with it?—A Subscriber.

1—The two batteries are used in order to keep one battery in good shape for ignition purposes. There is a switch in the control box which should be switched over from one side to the other every two weeks. When the switch is thrown to one position one battery is used for lighting and one for ignition, and when thrown to the other side the battery contents are reversed. If you wish to use but one battery there would be danger of exhausting it rapidly and Motor Age advises that you continue to use two for which the system was designed.

2—The battery is a 4-volt 60-ampere hour and there may not necessarily be anything wrong for immediately after a charge a meter may show 8 volts on a short circuit. Sometimes the cells test as high as 2.5 to 2.6 volts each. However, the surest test for overcharge is to check up on the gravity of the electrolyte, which is done with a hydrometer. If the solution tests between 1.28 and 1.30, then the battery is in good shape, but if the gravity is over 1.30, it is no doubt overcharged.

3—The coil should not buzz as it is not of the vibrator type. It will buzz only when the button is pressed. There appears to be nothing wrong.

Peugeot Timing a Secret

Morrill, Kan.—Editor Motor Age—Kindly explain how the valves on the little Peugeot, in the Indianapolis 500-mile race, are timed and illustrate by diagram.

2—What is the wheelbase and weight of this car?

3—What is the gear ratio on high, and also the size of the tires?—E. W. Slavis.

1—The factory considers this a trade secret.

2 and 3—See Motor Age, May 28 issue.

Questions Answered and Communications Received

E. McLean.....Greencastle, Ind.
F. Strong.....Portland, Ore.
C. Forthof.....Chicago
A Reader.....Chicago
A Reader.....Rockdale, Tex.
E. W. Slavis.....Morrill, Kan.
A subscriber.....Baileyville, Ill.

No communications not signed with the reader's full name and address will be answered.

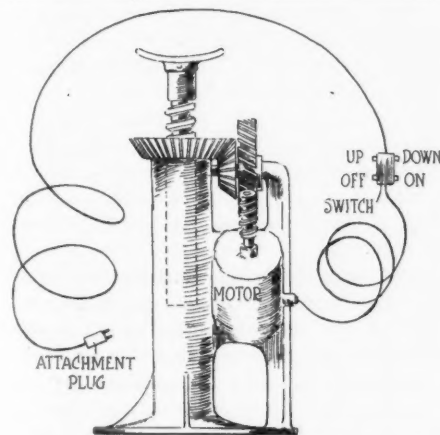


FIG. 2—AN ELECTRIC LIFTING JACK

Simple layout of a lifting jack operated by an electric motor as designed by a Pittsburgh reader

Bosch Magneto Co. Buys Rushmore Interests

No Change in Product—Both Factories to Operate as Before

NEW YORK, July 11—One of the largest mergers in the history of the accessory industry took place here today when the Bosch Magneto Co. purchased the plant and entire business assets of the Rushmore Dynamo Works, Plainfield, N. J. The purchase of the Rushmore interests is merely a broadening of the Bosch business and with the additional 100,000 square feet of floor space, 700 men and shop equipment acquired, the Bosch company hopes to be able to supply the demand for starting, lighting and ignition systems, making deliveries to the trade without delay.

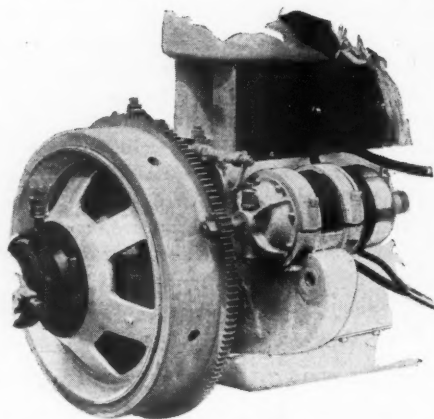
The plant at Plainfield will be conducted as in the past, manufacturing dynamos and generators for motor car starting and lighting systems and other electrical equipment such as train-lighting generators, searchlights, etc. With the plant and equipment, the Bosch company has taken over all present contracts and other obligations and present plans call for a continuation of the Rushmore business with no changes in the product. The engineering forces with Victor Kleisrath, the Bosch chief engineer, at its head and C. M. Mills as factory superintendent, will supervise the work in both the new plant, to be known as the Rushmore works of the Bosch Magneto Co., and the Bosch factory at Springfield, Mass.

With the merger comes a change in name for the former Rushmore products in the future will bear the name of Bosch-Rushmore and both factories will market their products through a common organization with the Bosch service stations, 240 in number, handling the service work for the entire business.

Scope of the Present Line

The line now includes three types of Bosch starting motors and eleven generator styles, three Bosch-Rushmore generators and three 12-volt Bosch-Rushmore crankers, four Bosch-Rushmore 6-volt crankers, Bosch magnetos, spark plugs and other electrical equipment.

The deal by which the two concerns were consolidated was under way for many months and now the Rushmore Dynamo Works, established 20 years ago to build electrical supplies, passes out of the hands of its former owners and becomes a Bosch interest. It was only a few years ago that the Rushmore company entered the motor car industry with a lighting system, con-



BOSCH-RUSHMORE CRANKING MOTOR INSTALLED ON MARMON

tinuing the rest of its line at the same time, later bringing out a flywheel starting system. Only last fall the Bosch Magneto Co. entered the lighting field after much experimentation and in the February 12 issue of Motor Age a complete description of its system was given. Immediately after the announcement of the introduction of a lighting system the Bosch company brought out a starting system, so that the products of the factory at Springfield, included magnetos, plugs, lighting and starting systems and other minor electrical accessories for the motor car. The new Bosch starting and lighting system was first accepted by a motor car builder when the Nurdyke & Marmon Co. announced it would be stock equipment on 1915 models.

Bosch products will hereafter be composed of starting and lighting systems of two classes, those made at the Springfield plant and those manufactured at the Plainfield factory, the former being named Bosch and the latter Bosch-Rushmore. The Bosch starting and lighting system is a two-unit system comprising separate motor, and generator, operating at 12 volts with a grounded return. The system is used on large six-cylinder motors and on cars in which the flywheel is not accessible enough to provide for flywheel installation. Usually the cranking motor is connected with the crankshaft by silent chain in connection with an over-running clutch, this chain-drive method being particularly desirable for cars with unit power plants and inclosed flywheels. The Bosch starting mo-

tor weighs about 35 pounds and is almost 6 inches in diameter and 10¼ inches long.

The lighting system comprises a shunt-wound dynamo driven either by chain, belt, or directly as the ordinary magneto, a switchboard, lamps, etc.

A characteristic of the Bosch installation is that the dynamo is designed to operate at engine speed. One type of generator, built somewhat on the lines of the Bosch magneto, is fitted with dowel pins at the base plate which registered with holes in the base of the dynamo and the height of the armature shaft from the base is such that it may be driven from the ordinary magneto coupling.

At 350 r.p.m. the dynamo shows 12 volts while its normal output of 7½ amperes at 13½ volts is reached at 650 r.p.m. The dynamo, as before stated, is shunt-wound, the field magnet excitation being governed by a specially-designed electromagnetic, automatic controller carried in the switchboard. The controller reduces the strength of the field as the speed increases and conversely increases the field strength as the speed decreases.

The switchboard unit contains a meter of novel construction, the lamp switch and the dynamo switch, as shown in the illustration. The meter is a combination voltmeter and ammeter and registers both charge and discharge. Throwing the switch to one side causes the meter to register voltage and to the other current, the same dial serving for both readings.

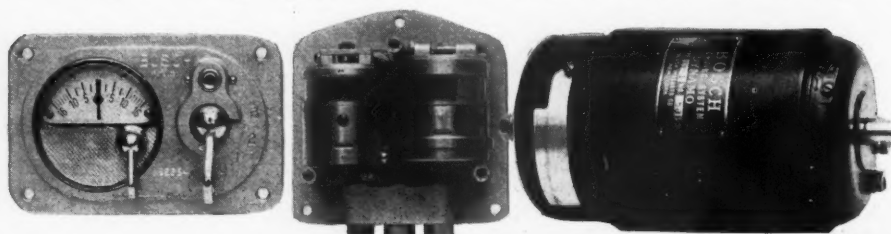
Bosch Lamps and Bulbs

The lamp sockets are permanently focused at the Bosch factory and the bulbs are standardized. The bulb is held in its socket by a spring contact plate in the back of the lamp and connected to the outside terminal. The taillight has two windows, one showing red while the other is clear. The dashlamp has a switch at its top so that the lamp may be extinguished while the taillight is burning.

The headlight reflectors are carried in the body of the lamp, while the sidelight reflectors are in the front glass retainer. The bulbs being held by bayonet holders. The reflectors of the headlights have received considerable attention, the maker claiming that the light is cast in an exceptionally wide angle, thus illuminating any hidden roadside obstruction and curves in the road.

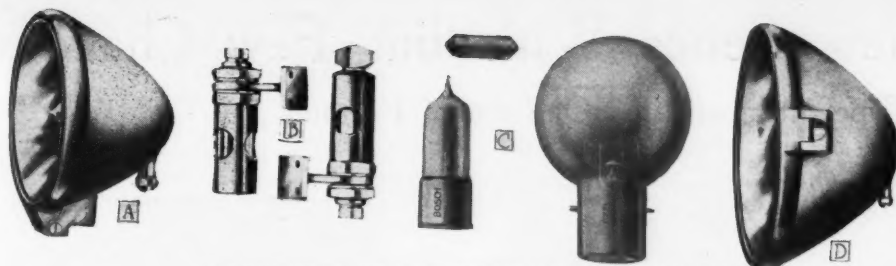
The Bosch-Rushmore starting and lighting system which will be used on 80 per cent of the installations, comprises the entire line as previously made by the Rushmore company. The installations all are used on the flywheel in connection with an end-throw arrangement that automatically engages and disengages the gear wheel on the end of the armature shaft with the toothed flywheel.

In the Bosch-Rushmore starting motors



PARTS OF THE BOSCH LIGHTING SYSTEM

At the extreme left is the switchboard which contains regulator and meter. The former is shown in the center, while at the extreme right is the Bosch lighting generator



ACCESSORIES OF THE BOSCH LIGHTING SYSTEM

A, side lamp; B, left lamp is for tail or sidelight, right one for dash or tonneau; C, taillight bulb at left, headlight bulb at right. Across the top is a Bosch fuse; D, one of the Bosch head lamps

made in 6 and 12 volt styles there is no engagement with the flywheel, except when starting the engine. The motor is series wound, the armature being held normally out of the line with the pole pieces by means of a compression spring in the commutator end of the shaft. When the switch is closed the armature is drawn by magnetic attraction into its normal position thereby meshing the pinion with the flywheel. To hold the armature in position against the compression of the spring it is made a little longer than the pole pieces so that a certain amount of end pull is exerted while the armature is turning.

When the engine starts the motor is relieved of its load and the current drops to practically zero, allowing the spring to push the armature and pinion out of action before the speed of the engine can increase appreciably. When the armature and pinion are out of action the current required to spin the motor is so small that the armature cannot be attracted back into its working position and therefore the pinion

remains out of mesh with the flywheel and the electric motor spins until the starting switch is released.

Regulation is effected by the use of an iron wire resistance called the ballast coil which is inserted across a series bucking coil and makes use of properties peculiar to iron when included as a resistance in an electrical circuit. The peculiarity referred to is that of suddenly increasing its electrical resistance when it is heated to a certain critical point. By so proportioning it that the heating is accomplished by the current itself the iron wire coil is made to act as a sort of electrical brake. It is so connected that when the generator is running slowly the whole current except the small portion required for the main shunt coils, passes through the cool iron ballast coil but on the latter heating up through a heavier flow of current the main current is in part automatically shunted through the bucking coil neutralizing the effect of the shunt coils, and holding the generator to a predetermined output.

Receivers for the U.S. Light Company

Federal Court Orders Business Continued

BUFFALO, N. Y., July 14—Judge Hazel of the federal district court Monday afternoon named James O. Moore of Buffalo, Guy M. Walker of New York and A. Harry Ackerman of Brooklyn, N. Y., as receivers for the United States Light and Heating Co., directing them to continue the business of the concern. The court fixed a joint bond of \$100,000 for the three receivers. Mr. Ackerman is a present manager of the Niagara Falls plant of the company.

Alleging that in the past 5 years directors of the United States Light and Heating Co., a Maine corporation, with a plant here in Buffalo, issued in an illegal manner \$9,500,000 worth of stock, several petitioners in the United States district court added to their application for the appointment of a receiver charges of fraud and mismanagement. Issuing of stock in five particular cases is claimed by the petitioners and complainants as having been in violation of the law.

Since the first of the present year the affairs of the company have been carried on by Frederic R. Humpage, of Buffalo,

and Guy M. Walker and J. A. Fletcher, of New York, as a stockholders' committee. The petitioning creditors do not desire that the factories of the United States Light and Heating Co. be closed down and in court yesterday afternoon they offered in evidence contracts to show that considerable business is offered the plant and that money perhaps sufficient to meet all obligations that are reported existing can be secured within the next several months.

What the petitioners maintain they do want is a thorough review of the operations of every defendant in the actions and an adjustment of the company's affairs. The concern claims assets of \$3,000,000, with reported liabilities of \$900,000.

PEERLESS ANNOUNCES \$2,000 CAR

Cleveland, Ohio, July 11—The Peerless Motor Co. next fall will enter the field of lower priced cars with a light four-cylinder five-passenger touring model, to sell for \$2,000. A lower-priced car, to be made by the F. B. Stearns Co., also will be marketed in the fall, officials have announced.

The new Peerless will be built along European lines and designed to embody features of the best foreign cars. It will weigh, fully equipped, less than 3,000 pounds. In the past the company has turned out only cars ranging in price from \$4,300 to \$7,200. The high-priced Peerless, however, will still be made. The company recently passed its quarterly dividend on \$2,100,000 preferred stock to conserve funds for making the new cars.

The Winton Motor Car Co. officials have announced they would not make a cheaper car and are satisfied with conditions as at present.

WESTINGHOUSE STRIKE ENDS

Pittsburgh, Pa., July 14—The strike at the Westinghouse East Pittsburgh plant was called off officially last Thursday by the workmen and while they were not supposed to return to work until yesterday, still a large number of the men reported on Friday and Saturday. The plant now is running full time.

AUSTIN DENIED INJUNCTION

Detroit, Mich., July 10—Judge Sessions, of the United States court, in Grand Rapids, Mich., refused to grant an injunction restraining the Cadillac Motor Car Company, Detroit, from continuing to make any more two-speed axles, which was applied for by W. S. Austin, the Grand Rapids car manufacturer. The case will come up for final hearing August 11.

STEWART-WARNER SUES EVER READY

Chicago, July 13—Suit has been brought in the United States district court by the Stewart-Warner Speedometer Corp., Chicago, against the National Carbon Co., Cleveland, for alleged infringement of a Stewart magnetic-type speedometer. This is an amendment to the original bill filed a few months ago against the American Ever Ready Co., New York, with offices in this city. The American Ever Ready Co. and the National Carbon Co. have consolidated and the Chicago branch, now called the American Ever Ready Works of the National Carbon Co., was the original defendant.

WALPOLE SALE POSTPONED

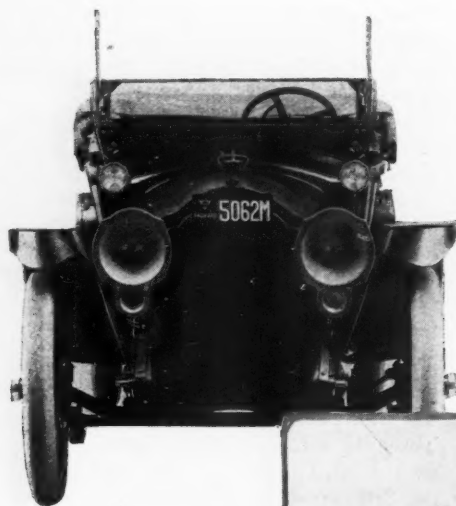
Boston, Mass., July 8—The sale of the Walpole Tire and Rubber Co. set for today has been postponed until August 12 by order of Judge Dodge of the United States district court. In consequence of an agreement the reorganization committee has arranged to buy in the property.

CHANDLER DECLARES DIVIDEND

Cleveland, O., July 10—The Chandler Motor Car Co. of this city has declared a dividend of 5 per cent on its common stock, while the Peerless Motor Car Co., Cleveland, and the Garford company, Elyria, O., have passed their regular quarterly dividend of 1¼ per cent on the preferred stock.

Packard Offers New Series With but Few Changes

Distinctive Type of Headlights One the of Features



Front view of the 1915 Packard 3-38, showing the new type of headlight, which really is two lamps in one. The small lamps have separate reflectors

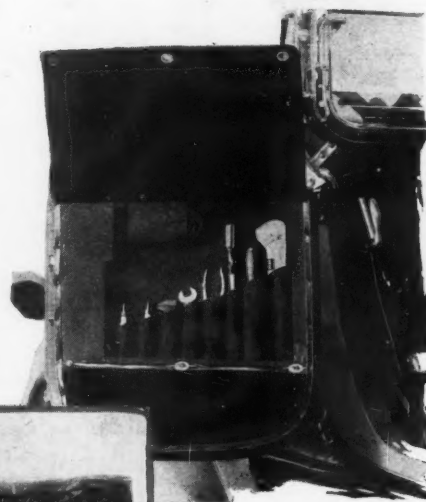
FEATURES OF THE 1915 PACKARDS

Two headlights in one, each with own reflector

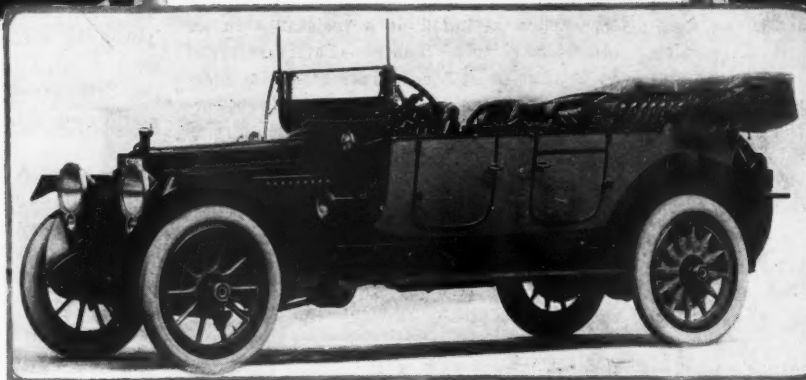
Two models 3-38 and 5-48.

Practically same as previous sixes

Valves, radiator and gearset enlarged on 3-38



Placing the most-needed tools in a door pocket as shown above is a novel Packard improvement. This door is next to the driver



THE 1915 PACKARD 3-38, SEVEN-PASSENGER TOURING CAR

A NEW series of sixes for the coming season is announced by the Packard Motor Car Co., the 3-38 and 5-48, the two new models differing but slightly from the 2-38 and the 4-48, which made up the preceding series.

There is one change in the outward appearance of the cars which is distinctive. This is the headlamp design. Each of the headlights has an auxiliary headlight with a separate reflector below the main lamp. The smaller lamp is an integral part of the other. These auxiliary headlights are designed for city driving or for meeting cars on the road but, it is pointed out, have the added advantage of being supported near the ground so as to throw light on the road ahead.

With the addition of auxiliary headlights, the side lamps are reduced in size and now are designed to be used only when the car is standing at the curb or for driving in cities where headlights of any kind are prohibited. The taillight and license tag illuminator have been replaced by a combination taillight and license light on the left rear fender.

Carburetor Changed Slightly

Though of the same operative design, the carburetor body has been changed in design so as to afford a housing for the auxiliary air valve. The opening in the housing is turned to the rear of the motor, thus reducing to a minimum the chances of getting dirt in the carburetor.

Other minor changes are the increasing of the size of the radiator on the 3-38, the making larger of the gearset on this same model and the increasing of its motor's valves to $2\frac{1}{8}$ inches.

General Appearance Unchanged

In general appearance the new Packards practically are the same as heretofore, having the same lines and features, such as the Packard form of radiator and sloping hood, the special type of bodies built in the Packard shops and so on.

Mechanically, too, there is little difference. General construction which always has been associated with the Packard chassis is still adhered to throughout. There are two main units, viz., the motor unit comprising the power plant and clutch, and the rear axle unit which consists of the final drive, gearset and differential gears.

Motors practically are identical with those used in the previous cars. They are both of the L-head type with cylinders cast in threes. The 3-38 has a bore of 4 inches and a stroke of $5\frac{1}{2}$ inches, giving it a S. A. E. rating of 38 horsepower, while the 5-48 with its dimensions of $4\frac{1}{2}$ by $5\frac{1}{2}$ inches is rated by this method at 48. The company uses these ratings in designating the cars, but their maximum power outputs are 65 and 80 horsepower, respectively.

Taking up the constructional details of the 3-38, the wheelbase is continued at 140 inches, which gives ample length for any

desired type of body. Tread is standard at 56 inches, while the overall length of the seven-passenger car is $187\frac{1}{2}$ inches.

The engine has its valves all on the right side and completely inclosed. These are of nickel steel, mechanically operated from the camshaft and interchangeable. The inclosing covers are of aluminum and oil-tight. Pistons fitted with three rings each are conventionally linked to the crankshaft by drop forged I-beam connecting rods. The crankshaft, carried on seven large size main bearings attached to the upper half of the crankcase, is so mounted and its proportions such that no vibration is possible, making for quietness and smoothness of running.

Some Motor Features

The crankcase, which is conventionally split into two horizontal sections, has cast webs integral with the upper section on either side. These webs extend to the side members of the frame, and act as mud aprons, preventing any mud or water from splashing up onto the motor parts.

The hotwater-jacketed inlet manifold on the left side of the engine is continued. This has four openings into the cylinders, two for each block of three. These passages must go across to the valve side, and in running through the waterjackets, assist further in fuel vaporization. The specially-constructed double exhaust manifold also is continued. This has a separate passage for the burnt gases from each block

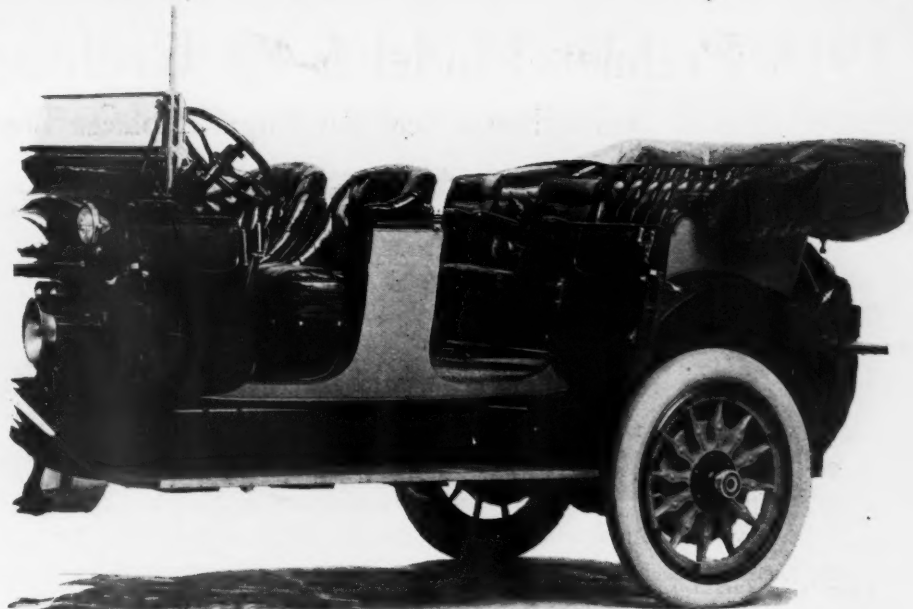
of three cylinders, so that there is no overlapping of the exhausts. Consequently there are two pipes connecting from the rear of the header and running down to the muffler.

As on the previous car, the ignition system is entirely independent of the lighting and cranking system. A Bosch duplex magneto located on the right side of the engine and driven from the end of the generator shaft is used, and the wiring to the cylinders still is completely inclosed within conduits of special form. These run along the tops of the cylinders, and the knife switches making the contact between spark plugs and ignition terminals are the only external portions. Wires run in a conduit from this upper wiring compartment down to the magneto.

Hollow Camshaft for Oiling

The oiling system is unchanged. Lubrication is by force-feed from a gear-driven pump, located in the crankcase. This pump is driven by worm gear on the camshaft. The system provides primary oiling for ordinary running and an auxiliary which is governed by the throttle and automatically operated, when the motor is under heavy load. The hollow camshaft serves as the main oil manifold from which oil is fed through lateral tubes in the crankcase web to the main crankshaft bearings, through a conduit in the crankshaft to the lower connecting rod bearings and thence, still under pressure, to the piston pins. Overflow from the piston pin bearings and spray from the lower connecting rod bearings lubricate the cylinder walls. When the motor is under heavy load, the auxiliary lubrication system feeds directly to the cylinder walls. The oil leads to the front gears now are drilled through the crankcase webbing, thus eliminating any external pipe leads.

The Packard-Bijur 6-volt cranking and lighting system is retained with slight refinements to make it more perfect. The cranking motor and the generator are separate units. They are both located on the right side and are readily accessible. The generator is driven by a shaft from the front gears and operates at one and one-half times crankshaft speed, generating at



LOOKING THROUGH THE OPEN DOORS OF THE PACKARD 3-38 TOURING CAR

speeds from 10 miles an hour and giving its maximum voltage at 15 miles an hour. The 120 ampere-hour storage battery is placed on the right running board.

The cranking motor, which has capacity to turn the engine at 100 revolutions a minute when the latter is warm, is geared at about $19\frac{1}{2}$ to 1 to the flywheel, and a pedal under the driver's heel operates the shifting mechanism and sends the current to the instrument for starting purposes. Its gearing to the flywheel is completely inclosed within the right crankcase arm.

Back of the engine is the dry-plate clutch which is housed in unit with the power plant, its case bolting to the crankcase. The casing plates are faced with a special friction material, while the shaft plates are of metal with ground faces. The drive shaft, which is uninclosed, is fitted with universals and drives from the clutch directly back of the gearset in unit with the rear axle.

Pressed Steel Axle Housing

Three forward speeds are afforded, while the rear axle itself has a pressed steel housing, and contains worm-bevel gears which were brought out first by the Packard company. These are a combination of

the bevel type and the worm, the gear faces being curved so that they engage with a rolling action giving contact throughout the engagement and making them noiseless.

Regular Body Line Retained

The regular line of Packard bodies still is featured. There are all types of inclosed cars, as well as distinctive phaetons, and touring cars of the open type. Equipment is complete and prices remain unchanged.

One body feature which is of special note is the method of carrying the tools. One of the doors is used as a tool kit, and there is a special compartment for each tool here. This makes a handy arrangement, making it unnecessary to disturb the seats to get needed tools.

Tires are 26 by $4\frac{1}{2}$ in front and 37 by 5 in the rear.

The 5-48 has a wheelbase of 144 inches, and incorporates all the features of the 3-38 with the added advantage of more surplus power. The specifications of the 3-38 cover the 5-48 with the exceptions that all tires are 37 by 5, cooling water capacity is slightly greater, and front springs are $\frac{1}{2}$ inch longer. The appearance of the 5-48 is almost identical with the 3-38, bodies being interchangeable.

Left drive with centralized control on the steering column still continues to be a distinctive feature of the Packard chassis.

There are two options in gear ratios for each chassis. These follow:

3-38		Number teeth in pinion	Number teeth in gear	Ratio to one
Gears				
3-38 low 25-mile.....	13	51	3.93	
3-38 high 28-mile.....	15	53	3.53	
5-48				
5-48 low 28-mile.....	15	53	3.53	
5-48 high 31-mile.....	17	54	3.11	

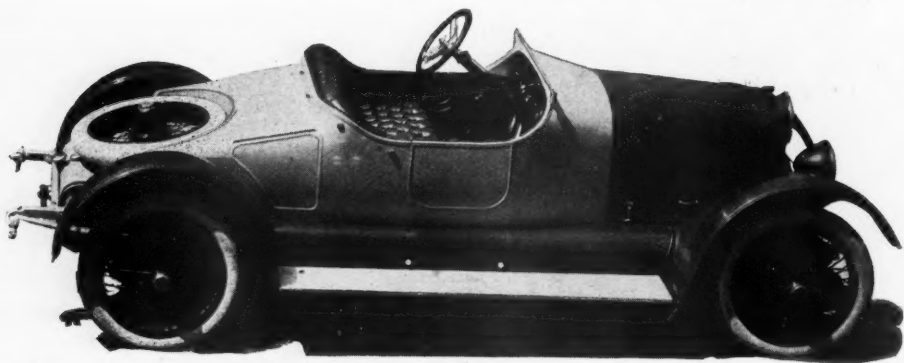
The weight of the standard 3-38 touring and phaeton chassis is given as 3,668 pounds without water, gasoline or oil, while that of the same chassis of the 5-48 is 3,815 pounds under the same conditions.



AN EXAMPLE OF CONSERVATIVE COACH WORK—THE PACKARD 3-38 LIMOUSINE

1915 Premier Model 6-49 Unchanged Except Springs

Semi-Elliptic Rear Suspension Replaces Three-Quarter Type



NEW PREMIER 6-49 ROADSTER SHOWING SPARE-WHEEL PIT

PREMIER cars for 1915, so far as at present announced, will be embodied in a single chassis model known as the 6-49. With one or two exceptions, the chassis is the same as that of the 6-48 of the 1914 series, the only radical chassis changes are in the use of long semi-elliptic springs at the rear instead of the three-fourths elliptic employed in 1914, and frame changes which are necessitated thereby. The new 6-49 Premier has a unit power plant consisting of a T-head, six-cylinder engine, cast in threes, whose cylinders are 4 by 5½ inches, a multiple-disk clutch and a three-speed gearset. The rear axle is of the three-fourths floating type and the wheelbase is 132 inches. Electric starting and lighting is provided by a 6-volt Remy system, and single ignition is obtained from an Eisemann magneto. The bodies fitted include a two-passenger roadster and a five-passenger touring car at \$2,385 and a seven-passenger touring car at \$2,435.

Looks to Easy Maintenance

There is a feature in the policy of the Premier Motor Mfg. Co. as shown in the details of construction of its products, that is worth noting particularly before a description of the car itself is attempted. This point is the thoroughness with which the plans were laid to make the car one that would be cared for easily by the owner. A study of the car reveals the fact that its maker has profited by experience in reliability runs.

Premier is one of the early supporters of strict reliability contests and has used the information gained in such trials in guarding against weaknesses which would show up in use, and in making all the minor adjustments unusually easy for the owner. To illustrate this policy may be mentioned the fact that practically every nut, bolt and screw throughout the car is locked permanently so that it is impossible for it to work loose. The Premier designer goes on the very excellent theory that if it is important for a bar or bolt to be carefully adjusted, it also is important that provision be made that

FEATURES OF PREMIER 6-49

Semi-elliptic rear springs instead of three-quarter.

Six-cylinder motor, 4 by 5½ inches.

T-head cylinders cast in threes. Disk-clutch, three-speed gearset.

Three-quarter floating axle. Remy electric starting and lighting.

Wheelbase, 132 inches. Roadster and five-passenger at \$2,385.

Seven-passenger touring at \$2,435.

Shock absorbers and rebound straps stock equipment.

this adjustment be maintained. This policy is shown also in the fact that all gears are integral with the shaft instead of sacrificing the narrow margin of metal at the base of the gear to cut a keyway and thus localize the entire strain and pull at one point. There is still another point in which this attention towards easy maintainance is well illustrated. On the spring ends and all points where brake rods or other rods pass through the frame, there are removable bronze bushings which can be repaired easily in case of wear.

Bearing this aim of maintainance in mind, a description of the car itself will show how it is carried out throughout the entire design. Cylinder dimensions of 4 by 5½ inches give the engine an S. A. E. rating of 38.4 horsepower, which is rather lower than the actual power delivered by the engine, the manufacturer stating that it delivers from 48 to 70 horsepower.

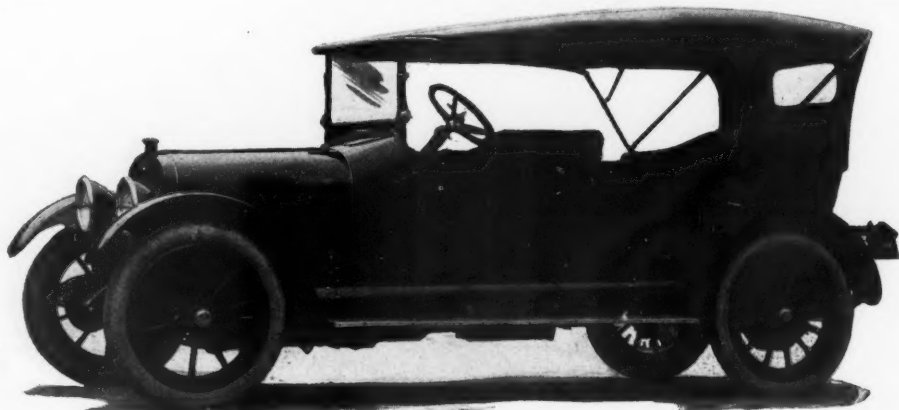
Triplet casting of the cylinders permits placing the three cylinders close together making a minimum distance between main bearings and center bearings. With these it is not difficult to obtain rigid alignment of the crankshaft.

As with the Premiers of the past, the cylinders are cast with a large opening at the top of the water jacket, which is covered with a light aluminum plate. The reason for such an arrangement is that it makes the foundry work more uniform and insures that the thickness of the cylinders is the same throughout. This also makes possible the removing of lime deposits, which may accumulate from the water circulation, and the maker has found that this light plate as a rule will give way when the motor is allowed to freeze up and thus will save the cylinder.

Lubrication System

Lubrication of the motor is a circulating system with a constant level splash maintained by a gear-driven pump. There is a sight feed glass on the dash. In the lower half of the crankcase are moulded transverse troughs. These have partitions between them so that the dipper on the ends of the connecting rods dip into the oil on any grade below 27 per cent. The oil which overflows from the troughs drains into the reservoir in the rear, and again is forced back into them. Pockets in the bearing journals catch the oil and feed it direct to the bearings through the oil holes.

Valves are completely inclosed and the push rods have 1-inch rollers which are ground inside and outside. The



PREMIER 6-49 IN TOURING FORM

flywheel is completely inclosed and the whole power plant is suspended at three points. The three-speed gearset is in an oil-tight housing and the gears are cut from nickle-steel forgings, the shafts running upon annular ball bearings. The ends of the transmission shaft are provided with stuffing boxes which prevent leakage of oil. The propeller shaft is provided with two universals to eliminate side strain on the shaft bearings, by permitting free action in every direction. The front axle is a single I-beam forging without welds, the spring seats being integral. Roller bearings are provided in the wheels, and imported load-carrying bearings in the steering knuckles. This method of load-carrying in connection with the arrangement of ball and socket joints in the tie rod and reach rod is provided to give ease and safety in steering control, and also avoid the tendency of side play at high speeds on rough roads.

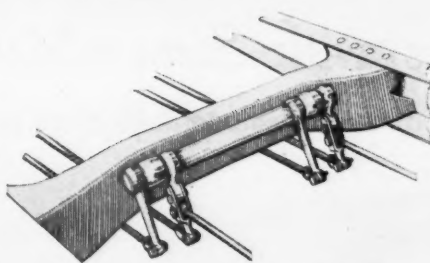
Rear axles are a Premier patent and are generally termed a three-fourths floating type, inasmuch as this carries none of the load, but the shaft cannot be pulled out of the housing without disconnecting from the differential pinions. The Premier people call it "90 per cent floating axle." It has an internally ribbed center housing so that truss rods are dispensed with. Handholes in the rear of the housing permit the gears to be adjusted to take up wear. The live axle shafts are squared at the inner ends to fit into the differential and at the outer ends are provided with three clutch jaws forged integral with the shafts themselves. These engage with corresponding clutch jaws in the hubs of the wheels through which the drive is transmitted.

The Premier Braking

Brake drums are an integral part of this clutch and hub arrangement. The internal brakes are operated by a pedal, and are steel shoes. The emergency brakes are external and are steel bands covered with raybestos. The brakes altogether provide 526 square inches of braking surface. Tires are 36 by 4½ inches in size, although 34 or 36-inch wheels are offered on the touring car as an option.

Body lines in general are of the popular streamline type with invisible hinges and clear running boards. The framework is of oak braced with steel over sheet-metal panels. Special protection is provided against rattling of the hood, and the front fenders are flanged to make a rigid connection between the splash guard and the car. All fenders are crowned and the inner ends are brought down several inches below the running boards.

The disposition of the battery and tool boxes by which they are made accessible and yet out of sight and which was one of the features of one of the 1914 Premier models is in the apron. By this method the battery and tool boxes are



BRAKE CONNECTIONS OF PREMIER

suspended beneath the runningboard apron, and the removal of a portion of the apron on either side opens them up. This is accomplished by turning two thumb nuts.

New Roadster the Feature

The feature of the Premier 6-49 is the new roadster, which has particularly speedy lines. Provision for carrying a spare wire wheel or two spare tires is made on the sloping deck by an inset circular space, into which they fit. In the touring car spare tires are carried in a cradle at the rear, which provides for two extras. The headlights are of the two-bulb type providing brilliant lights for country driving and less intense ones for the city; this does away with any side lamps. There is a combination tail and license lamp, an instru-

ment lamp, and inspection lamp, all being independently operated. A motor-driven tire pump is provided which is gear-driven from the engine. The steering column, which is on the left side, is provided with a carburetor air adjustment. A fuel tank of 21 gallons capacity, fitted with a gasoline gauge, is located in the rear of the body rigidly supported between the frame members. Fuel is fed under pressure, and there is a pressure gauge on the dash with auxiliary hand-pump for the convenience of the operator.

Another feature which is continued from this same earlier model and which has been described in a previous issue is the method of suspension of the fuel tank whereby it is carried within the frame and by the frame and yet it is only half way above it.

Rather unusual factory equipment are the shock absorbers and recoil straps, which are fitted. These, together with the rubber bumpers and the 60-inch semi-elliptic rear springs are designed to give maximum easy riding. The equipment also includes the Goldie one-man-top, single-piece ventilating windshield. Warner speedometer and so on. Wire wheels are offered for the touring cars at \$80 per set of five, but on the roadster either wire or wood wheels may be specified.

Finds South Africa Promising Market

Hupmobile Officer Reports Trade Outlook

DETROIT, Mich., July 11—That South Africa is one of the greatest fields for the motor car is the opinion of C. H. Dunlap, export manager of the Hupp Motor Car Co., Detroit, who has returned from that far-off country, where he investigated the motor car possibilities in South Africa. Mr. Dunlap remained 22 weeks on the African continent.

"There is not another country or another part of the world," said Mr. Dunlap, "where the motor car can be used to greater advantage. This is because of the very poor railroads that seem to abound throughout the union. The lack of transportation facilities makes it necessary for the South African to use some other means of locomotion than the ox-cart and right here is where the motor car steps in. The roads around the large cities like Cape Town, Johannesburg, Pretoria, Port Elizabeth, are in excellent condition, but those outside of these important centers are very poor and in many sections there are none and one has to travel across the veldts. The colonial government has sanctioned a project for the establishment of new roads and improving the highways throughout the land, for which \$5,000,000 have been appropriated. The work of improving the roads has been started already and many miles will be found in good condition by the end of this year.

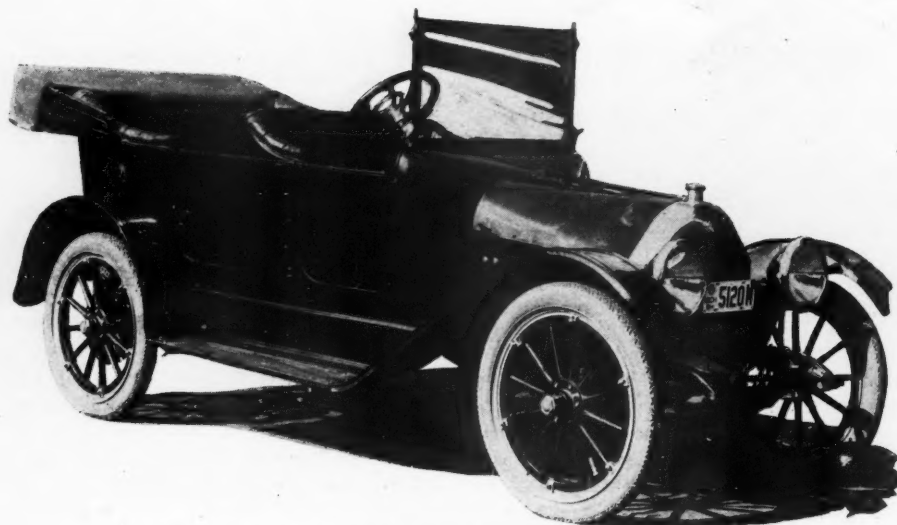
"The commercial travelers use motor cars to a large extent, as it helps not only in developing their territory but they are able to visit a much greater number of small towns and villages which they hardly could reach in any other way without spending too much time. A good many mine operators are using motor cars and also many Boer farmers who live in the interior and who formerly went to town only two or three times a year.

"Conditions in South Africa for 1915 look very good. There are many irrigation projects pending, which surely will be put into execution and they will greatly increase the agricultural prospects for the country. The colonial government is using every means at hand to increase prosperity and the general development of the land.

"The Hupmobile business in Africa is very good and we are well satisfied. In fact we are doing one of the largest businesses any motor car manufacturing concern in the world does in Africa today. Our agent in Port Elizabeth contracted for twenty-four cars for the year 1914 and he thought that even would be pretty high for Africa. Up to a few weeks ago he has actually received, as the books show, 400 Hupmobiles. If we would be able to ship him all the cars he wants we hardly could take care of our other foreign representatives."

New Wahl Appears with Streamlines and V Radiator

One-Man Top and Demountable Rims on \$890 Car



WAHL FOR 1915 SHOWING BODY LINES AND POINTED RADIATOR

THE new Wahl car which makes its appearance this month from the shops of the Wahl Motor Co., Detroit, is a full streamline design which is in accord with present-day ideas of body form and mechanical construction. On the Wahl chassis, which has a wheelbase of 112 inches, two bodies are fitted, one a roadster and the other a touring car, both selling at \$890.

Equipped with a Hazard motor, the chassis leaves nothing to be desired in the way of flexibility and quick get-away. A demonstration run of several miles showed speeds of from 5 to 50 miles an hour on high, and proved the ability of the motor to accelerate the car in high gear from about 5 miles to 35 miles an hour in the distance of a single city block, no shifting being done. This is a specially good performance for a light car and a comparatively small motor. The total weight of the touring car is given at 2,250 pounds.

Details of Power Plant

The horsepower rating is 28.5, according to the maker, and with a cylinder bore of $3\frac{3}{4}$ inches, together with a stroke of $4\frac{1}{2}$ inches, this motor should readily turn up that amount, although the formula rating is but 22.5. The construction is of the unit power plant type, the gearbox bolting through a flange to the rear of the flywheel housing, and the three-point suspension principle being carried out by having the two rear supports integral with the flywheel housing, and the front support in the center. The cylinders are cast in pairs.

Being an L-head the valves are all on one side—the left. These are completely inclosed by two cover plates removable through thumb nuts. The exhaust header runs above the intake connections, and in accord with general practice, there is an individual exhaust opening from each cylinder, allowing free escape of the burned

FEATURES OF NEW WAHL

Four-cylinder block L-head motor.

$3\frac{3}{4}$ inches bore, $4\frac{1}{2}$ inches stroke.

Unit power plant.

Atwater Kent ignition, Stromberg carbureter.

Wheelbase, 112 inches; tires, 32 by $3\frac{1}{2}$.

Touring car and roadster at \$890.

Electric cranking and lighting, \$125 extra.

One-operator top and demountable rims stock equipment.

gases, while there is a common opening from each two cylinders to the intake manifold.

Crankshaft and camshaft are each carried on three bearings, which are of ample size. Timing gears are spirally-cut and of proper pitch to eliminate any noise when running at speed. One cover plate at the front when removed exposes the entire gear train for inspection or adjustment.

The crankcase is of the barrel type. That is, instead of having two horizontal split halves, it is all in one piece. There is an opening at the bottom, which gives access to all bearings, however.

Oiling of Motor

The oil pan which is bolted to the under side of the crankcase contains a series of four troughs which are used in connection with the splash system of lubrication. A scoop on the lower end of each connecting rod dips into the corresponding trough on each down stroke, splashing the lubricant up into the cylinders and lubricating the walls and piston surfaces. The timing gear drive is oiled from an oil pocket of depth enough to insure a sufficient

quantity of oil at all times. The crankcase has an oil level to show the amount in the motor.

The carbureter is a Stromberg, while ignition is provided for by an Atwater Kent distributor system, the unit being placed on the right side and driven by a shaft in connection with the timing gears.

Cooling is by thermo-syphon. The radiator is of ample size of the Mercedes type and of V-shape. The fan is belt-driven.

The electrical system is of Deaco make, and is of the two-unit type, motor and generator being separate and mounted on opposite sides of the power plant. The generator, on the right, is driven from the exposed shaft at crankshaft speed, while the starting motor placed at the opposite rear side and connects to the teeth in the flywheel rim through an over-running clutch. The Michigan storage battery used with these instruments is of 90 ampere-hours capacity and 6 volts. The system is of the two-wire type, and there are two sets of bulbs in the headlights, the smaller ones being intended for city work. The price of the car with the electric generator and starter is \$125 more.

Multiple-Disk Clutch

The clutch, which is housed with the flywheel is a 9-inch disk type, the disks being lined with raybestos. The gearset is a three-speed type with wide-faced gears and made strong enough to be foolproof even though the shifting be accidentally done without throwing out the clutch. This was demonstrated on a number of occasions.

The drive goes back through a propeller shaft inclosed within the conventional form of torsion tube construction. There is a universal joint and the front end of the shaft, and it then runs directly back to the differential unit. The rear axle is semi-floating, and is carried on Hyatt spiral roller bearings.

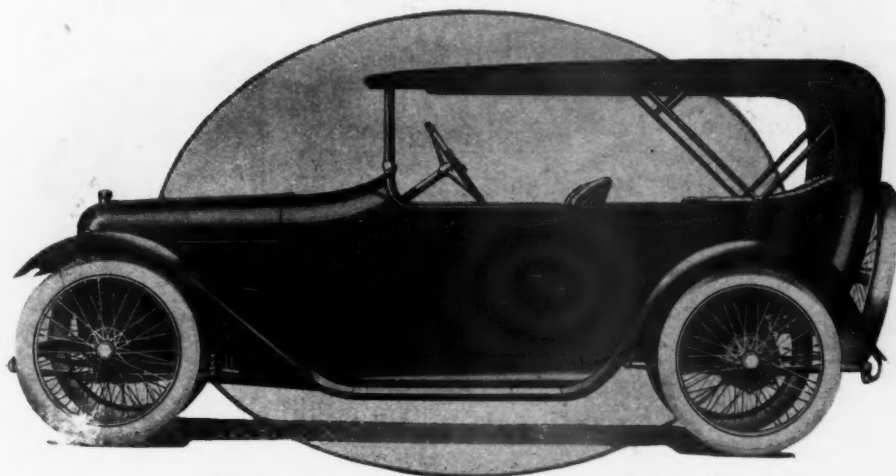
The brakes are of the usual internal expanding and external-contracting form, the drums having a diameter of 12 inches and acting on the rear wheels. Wheels of artillery wood type carry 32 by $3\frac{1}{2}$ -inch tires on demountable rims. Springs are three-quarter elliptic in the rear.

The hood is given a slope to meet the V-radiator, while at the other end it meets the sloped cowl in unbroken line. Then the body widens out in graceful curve, affording room for three in the rear seat. Doors are of large size, making entrance and exit an easy matter, and they are mounted on concealed hinges. The instruments necessary to the driving of the car are conveniently placed on the cowl board.

The equipment includes a one-operator top, special curtains, windshield, extra rim, speedometer, tire carrier at the rear and full complement of tools.

Fischer One of the Newcomers in the Light-Car Field

Five Body Types, with List Ranging from \$595 to \$845



THE MODEL D FISCHER, A TOURING CAR SELLING AT \$645

A NEWCOMER in the light-car field is the Fischer, which is to be made in quantities in Detroit by the C. J. Fischer Co. This car, with a wheelbase of 104 inches and standard tread of 56 inches, is to be equipped with five body types, all of exceedingly attractive appearance.

The present selling prices are \$595 for the speedster, model A; \$595 for the two-passenger touring, model B; \$645 for the two-passenger cabriolet, model C; \$645 for the four-passenger tourist, model D; to \$845 for the four-passenger sedan, model E.

Fischer Wheel Equipment

Although the standard wheel equipment of all models except the model A speedster are artillery wood type, a set of five Houk wire wheels may be had for \$30 extra. The model A is equipped with these regularly. Tires on models A, B and C are 30 by 3, while the others take 31 by 3½ size. The wood wheel outfits are fitted with demountable rims.

Lending to the appearance of the Fischer cars is the V-shaped radiator, which has been well designed to be proportionate to the size of the chassis. Besides being of V form its top is rounded so as to take away any abrupt line at the front and when looking at the car from the side. The fenders are crowned.

The equipment besides the electric generating and cranking system, consists of an extra demountable rim, speedometer,

FEATURES OF THE NEW FISCHER

*Five body styles offered
Electric cranking and lighting
Motor 2 3-4 by 4 inches
V-shaped radiator
Streamline body*

windshield, top, top envelope, kit of tools, jack and tire pump.

The motor used is a standard Perkins type, made by the Massnick-Phipps Co., Detroit. It has a bore of 2¾ inches and a stroke of 4 inches, giving an S. A. E. rating of 12.08, which is of course greatly exceeded. The motor readily turns up 15 horsepower. The power plant is of the three-point suspended type, the gearset being in unit with the engine proper.

Details of the Motor

The cylinders are cast in a block and are L-head type with the valves on the left and inclosed by cover plates in the usual manner. The crankcase is of the barrel type, which construction is much used on small motors, due to the greater rigidity which it gives to the crankshaft bearings and to the better machining proposition also. Inspection of the bearings is made possible through the plate at the bottom, which also forms the reservoir for the lubricating oil.

The motor has a three-bearing crankshaft which is of ample size to reduce vibration to the minimum. The construction of the crankcase is such that the shaft may be removed through the rear, a plate carrying the rear being bolted to the case substantially, and when unfastened, giving sufficient opening to permit the shaft to pass through. This design is of course not new to motor building, but is a great advantage with the type of case used.

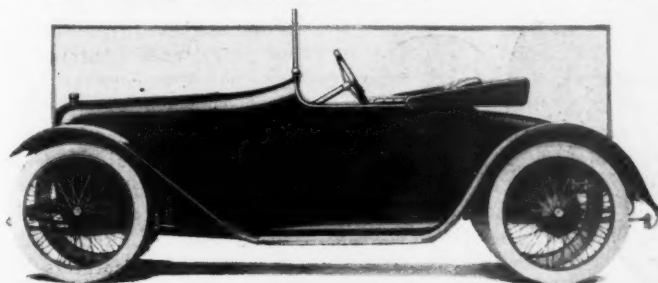
The pushrods for operating the valves are roller-acting which reduces friction and noise. In the sides of the cover plates inclosing the valve mechanisms there are vents which take the place of the breather pipe often used. These allow breathing up through the tappet bearing and thence through the vents to the outside air.

An unusual feature of the motor is the manifolding on the left side. The intake and exhaust really are cast in one piece, the passages to the various openings and to carburetor and exhaust pipe being cored within the casting. The exhaust passes above the intake and there is an opening to each cylinder. Below this there are the two passages to the intake ports, a short pipe from the carburetor connecting to this casting at the center. The exhaust pipe joins the combination manifold at the rear.

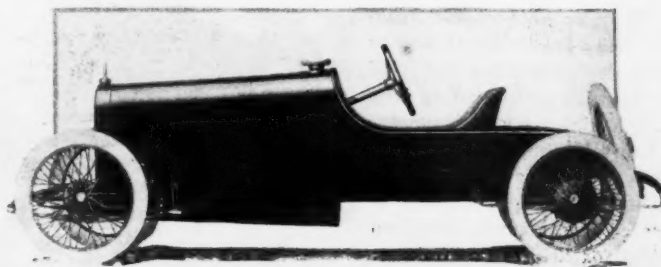
Fischer Oiling System

The oiling is done by a plunger pump and splash from the ends of the connecting rods dipping into the individual oil troughs under the cylinders. The plunger pump, located on the left rear side of the crankcase so as to be operated by a cam on the camshaft, pumps the lubricant from the reservoir into the front of the crankcase whence it is fed by a series of passages to the rear bearings and also to the timing gears. Cooling is by thermo-syphon and ignition by the Atwater Kent distributor system.

The motor gives its power to the rear through either a cone or multiple-disk clutch and thence to a three-speed selective sliding gearset. The rear axle is semi-floating of the bevel-gear type and its axle shafts are carried on Hyatt spiral roller bearings, while the pinion shaft is mounted on double-row barr bearings.



MODEL B FISCHER TWO-PASSENGER ROADSTER



TWO-PASSENGER FISCHER SPEEDSTER LISTED AT \$595

Imp the Second a Four-Cylinder Water-Cooled Roadster

Side-by-Side Seater, but Narrow Tread
Has Friction and Chain Drive



IMP CYCLECAR AFTER ITS TRANSFORMATION, SHOWING TOP AND SEATING ARRANGEMENTS

IMP THE SECOND is the name of the 1915 cyclecar announced by the W. H. McIntyre Co., Auburn, Ind. The new model of the Imp is quite a different car from the original Imp of 1914. The new model has a four-cylinder water-cooled motor instead of the two-cylinder V-type engine used in the earlier model. The friction drive is retained, but instead of final drive by V-belts, a single roller chain is used, driving a live rear axle. The new Imp instead of being a tandem seater, is now side-by-side, and in general appearance is like a standard roadster. It is stated that weight has been reduced considerably and many refinements incorporated. The motor has a bore and stroke of $2\frac{3}{4}$ by 4 inches with cylinders of the L-head type cast in block, and mounted on an aluminum crankcase. The motor is thermo-syphon cooled, and is oiled by splash assisted by a plunger pump. Both intake and exhaust manifold are cast integrally. Magneto ignition has been discarded and a unisparker substituted.

Gearless Differential

The rear axle incorporates a gearless differential whose main feature is said to be that it prevents skidding. The new Imp has left drive and is equipped with wire wheels, and 28 by $2\frac{1}{2}$ -inch tires. The rack-and-pinion steering, double transverse semi-elliptic front springs, and cantilever rear springs are retained.

The new side-by-side roadster body has artificial leather upholstery and the seat is 37 inches wide and 16 inches deep with a high back to make for comfortable riding. The fuel tank of the new Imp has a capacity of 5 gallons, and is located in the cowl. The Imp prices for 1915 are as follows: \$395, including horn and elec-

tric light, \$420 with top, curtains and folding windshield, and \$495 completely equipped, including electric cranker and generator.

CORNELIAN NOT ILLUSTRATED

In Motor Age issue of July 2, page 40, a wrong illustration was used as a view of the Cornelian light car. The correct illustration is shown on this page and serves to bring out one feature of the car which is worthy of notice. The body is formed of sheet metal in such a manner that it forms both body and frame. The car has a four-cylinder water-cooled motor, shaft drive and differential and is standard tread. It weighs 900 pounds and is made by Blood Bros., Kalamazoo, Mich.

DENBY A NEW TRUCK

The Denby Motor Truck Co. has started business in Detroit with offices at 2036 Dime Bank building, and a factory at Du Bois and Franklin streets. The factory has 20,000 square feet of floor space, which is to be doubled later, option having been taken on the additional room.

Contracts have been placed for material for 500 trucks of from 1,500 pounds to 1 ton capacity for the first year, with an in-

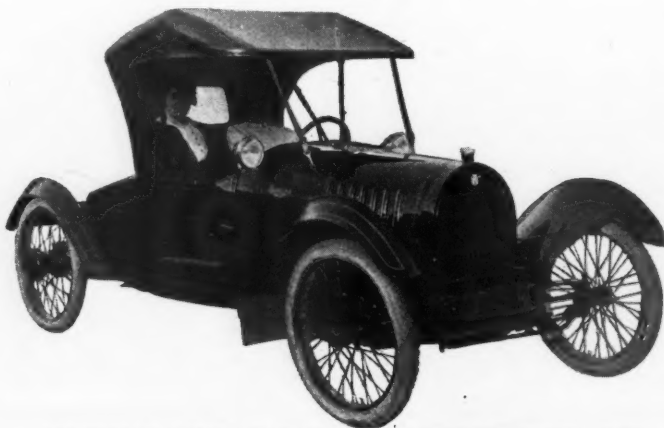
crease to 1,000 trucks as the business develops. Garvin Denby is president and general manager of the company. Mr. Denby formerly was secretary and treasurer of the Federal Motor Truck Co., and is a director of the Century Electric Car Co. and the Hayes Mfg. Co. J. Walter Drake, vice-president of the new company, was formerly director of the Federal Motor Truck Co., and is president of the Hupp Motor Car Co. and an officer of the Detroit Pressed Steel Co. Arthur Webster, secretary, is a member of the law firm of Chamberlain, May, Denby & Webster.

Edwin Denby, treasurer, formerly was vice-president and a director of the Federal Motor Truck Co., and is treasurer of the Hupp Motor Car Co., and a director and chairman of the executive committee of the Century Electric Car Co.

L. C. Freeman is engineer, R. P. Spencer, sales manager, R. F. Moore, advertising manager, E. L. Schmacher, efficiency engineer and production manager, M. E. McKenney, assistant sales manager.

DUNNAGE ALLOWANCES DISAPPROVED

New York, July 11—The interstate commerce commission has rendered its decision disapproving dunnage allowances, the particular territory involved in this case being the southwest. Railroads in that territory issued a tariff cancelling the allowance of 500 pounds for dunnage on shipments of articles in closed cars. The National Automobile Chamber of Commerce and manufacturers of other articles protested and the cancellation was suspended by the commission but will now be permitted to take effect July 15. This decision will be of interest to motor car manufacturers in this country.



CORNELIAN LIGHT CAR WHICH HAS SHEET-STEEL BODY

Streamline Body and Longer Wheelbase on 1915 Metz

Cowl Gasoline Tank—Tufted Upholstery

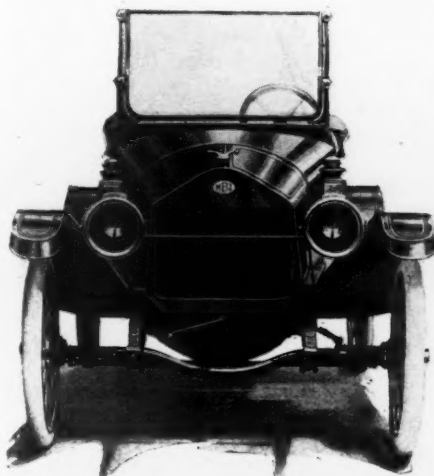
FEATURES OF THE 1915 METZ

*Streamline body with tufted upholstery.
Wheelbase 6 inches longer.
Gasoline tank in the cowl.
Friction drive retained.*

A NEW streamline roadster, with few mechanical changes but many body improvements is announced by the Metz Co., Waltham, Mass. The new car is a fore door model called the 22, sells for \$495 and has 6 inches longer wheelbase than the 1914 model. The present wheelbase is 96 inches, whereas the former model showed 90. The gasoline tank is now located in the cowl instead of in the rear of the chassis, and in this way a true streamline effect has been obtained, making the car a much more pleasing job than its predecessor.

The motor still remains a four-cylinder block casting, with a bore and stroke of $3\frac{3}{4}$ by 4 inches and incorporating a removable cylinder head. Bosch ignition and a standard carbureter are retained and the friction drive continues to be a feature. Instead of the gas generator for lighting the 1915 Metz has a Prest-O-Lite tank fitted to the left running board. The drive is left and the control center as in the previous model.

The body is a new one and instead of having smooth upholstery it has the tufted type which gives the car a better appearance. The seat is amply roomy for two persons and the backs have been made more comfortable. The doors are 20 inches wide. The 1915 equipment includes a windshield, top with cover, Prest-O-Lite tank, tools, etc., and tires 30 by 3-inch of Goodrich make.



FRONT VIEW OF THE LATEST METZ



THE NEW METZ STREAMLINE ROADSTER

Singer Six to Be Brought Out Shortly

THE Singer six, Charles A. Singer, Sr.'s new car, is now undergoing road tests and it is stated by Mr. Singer, who is the head of the Singer Motor Co., that the company will be able to begin deliveries about July 15. It is stated that the car has been well received in its specification form and a brisk business is anticipated during the summer.

By a plan which the company is not yet ready to make public the vehicle will be sold complete with wire wheels and special painting at considerably less than \$2,500. Colors are optional with the buyer, as are wood or wire wheels.

The car will be built in one regular model with a 135-inch wheelbase. The regular touring body will seat five passengers and any other type or size will be booked as a special order. It will have left steer and center control with the button of the Klaxon on top of the steering column. A German silver radiator with a decided V front will add a foreign effect and the hood will taper into the cowl of the stream-line body.

Power will be derived from a six-cylinder, T-head, triple-cast, 4-inch bore and a $5\frac{1}{2}$ -inch stroke Herschell-Spillman motor with an S. A. E. rating of 38.4. A Westinghouse lighting and starting system will be installed as well as a Taylor Noil power-driven tire pump mounted on the motor. An Eisemann dual high-tension magneto and a three-jet C. R. G. carbureter, on which Singer holds the patents, will be included.

On the dash will be located an electrically-lighted Stewart speedometer with Empico drive and an 8-day, keyless Phinney-Walker clock. All gauges are flush

and all the instruments have black dials and nickel rims. A rain-vision ventilating windshield of French plate glass protects the driver. A Pyrene fire extinguisher also will be affixed to the dash.

Axles, front and rear, are Timken. Roller-bearing pivot pins will be incorporated in the front, while the rear axle will be of full-floating silent worm bevel drive construction.

The gearset will be of the four-speed selective type with a dry-plate clutch of fifteen plates, all bolted to the motor base, making a unit power plant. Drive shaft and universals are Spicer.

Tires will be 36x4½ front and rear, and wood or Houk wire wheels will be optional without extra cost. A one-man pantasote top with Jiffy curtains protects the passengers.

LIGHT SIX FOR JEFFERY

Kenosha, Wis., July 11—That the Thomas B. Jeffery Co., Kenosha, will bring out a light six at a remarkably low price to supplement its present Jeffery line, consisting of a four at \$1,550 and a six at \$2,250, leaked out during the convention of district representatives at the Jeffery factory last week. Nothing official has been issued by the company, however. Twenty-three district agents attended the sessions, which were called to put under way a broad extension of the Jeffery sales organization throughout the United States. A new plan of organization has been worked out during the last few months with the result that the country has been divided into twenty-three districts, each under the control of a district representative.

New Buffalo Electrics Have Steering Wheel in Center

Central Control System Feature of 1915 Line

EMBODYING a wealth of unusual features and differing in many respects from the models of former seasons, the new designs of the Buffalo Electric Vehicle Co. possess unique points that distinguish them from electric cars as a whole. A central control system is the most pronounced of these radical departures from previous practice. In the new cars, the driver sits exactly in the center of the floor, the steering column and the brake pedals being in the center instead of on either the right or left side, as in the ordinary arrangement.

The vehicle seats five, two swivel seats being in front with sufficient space between them to allow an unobstructed view for the driver, while the remaining two seats are located at each side and slightly to the rear of the driver.

Center Drive Advantages

Besides affording what is claimed as an ideal position for driving, combining as it does many of the advantages of both right and left drives, the center drive permits symmetrical disposition of the control members under the floor.

Other changes over last year's models are the use of cantilever springs at the rear, a double-dropped frame, and a ball-and-socket front end support for the motor. The body also has been entirely redesigned to streamline principles. The method of regulating the motor by means of a lever on the steering wheel in addition to a foot controller operated in conjunction with the service brake pedal is retained.

The motor used is again of Diehl manufacture, but it is a special design so wound that the driving speed of the car is largely automatic irrespective of the grade over which the vehicle is traveling. This feature is obtained by using the motor as a brake on down grades, the braking effort being controlled automatically by the speed at which the car attempts to run. The current generated at this time by the motor in its capacity of a generator passes as charge into the battery.

In this way a considerable extension of mileage per battery charge is obtained.

The winding is shunt and the control is arranged so that the armature is never broken while changing speeds, the variation being effected only through resistances inserted in the fields. The controller is of the circular type and is remarkably compact. It occupies a position at the base of the steering column and operates by a radial brush arm actuated directly through the steering column by a short lever on the handwheel. Immediately beneath it and attached to the base is a reversing switch of the sliding-contact type. This switch is operated by a knob in the center of the steering wheel.

Reverse in Steering Column

By means of a key at the top of the reverse switch rod sliding into a keyway in the boss of the control lever, it is impossible to use the reversing switch except when the control lever is in the neutral position. The small size of the reversing switch is possible by the method of reversing the motor on the field instead of on the armature. Although this is the main controlling device the Buffalo company still make use of the pedal-operated switch which is capable of controlling the

car within speeds of 9 to 20 miles per hour.

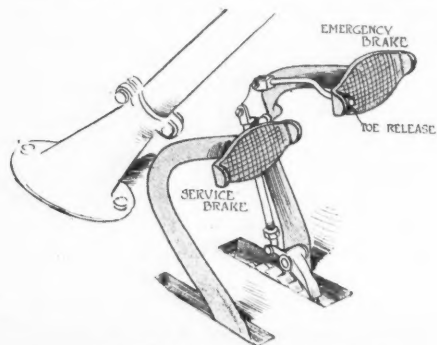
The foot switch is located under the floor, and is connected by linkage to the emergency brake pedal. It is a three-point regulating switch affording all necessary resistance for starting, stopping and speeds up to 9 miles per hour. It will be seen that the car can be started by the pedal without the hands being used for other purposes than steering.

By connecting up the brake lever with the control member there is nothing to remember when an urgent stop is necessary except to apply the emergency brake. This action automatically cuts out the current in steps and holds out the motor from operation until the pedal is released, when the current is applied step by step in the customary manner. A magnetic blowout is incorporated across the final contacts to prevent sparking. All control members are inclosed in dustproof cases.

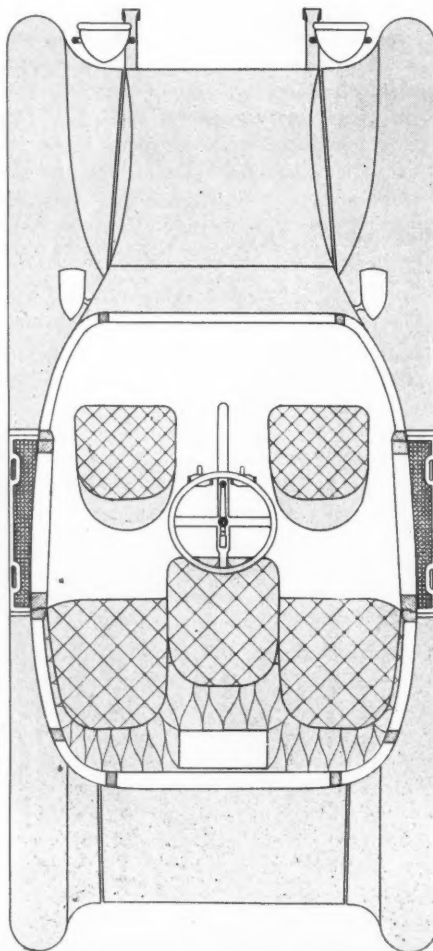
New Motor Suspension

A distinct departure from ordinary practice in electric design is the support of the motor on a single point at the front end in place of the double-trunnion suspension used this year. The new suspension consists of a bronze ball in a steel socket hung from a cross member. No universals are used and therefore the torque is taken directly by the driveshaft casing, which connects the motor solidly with the rear axle housing. The axle used is of Timken manufacture with the new curved bevel differential by which, it is claimed, extreme quietness of running is obtained. There is no other reduction than the differential, which has a ratio of 5.13 to 1 with the motorshaft. Both brakes act on 14 by 2 1/4-inch drums on the rear axle, the emergency brake being internal.

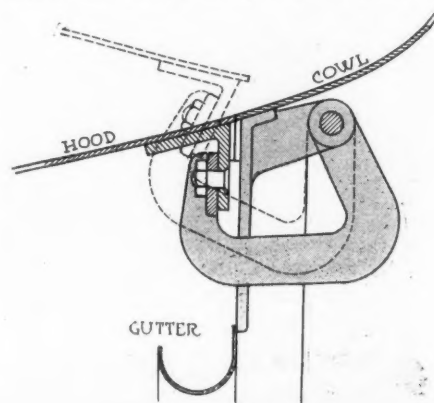
Several interesting details of body design are noticeable in the new coupe, besides the seating arrangement. All angles have been removed from the outline, which is streamline as much as possible. The hood over the battery is hinged where it meets the curved cowl, but the joint is



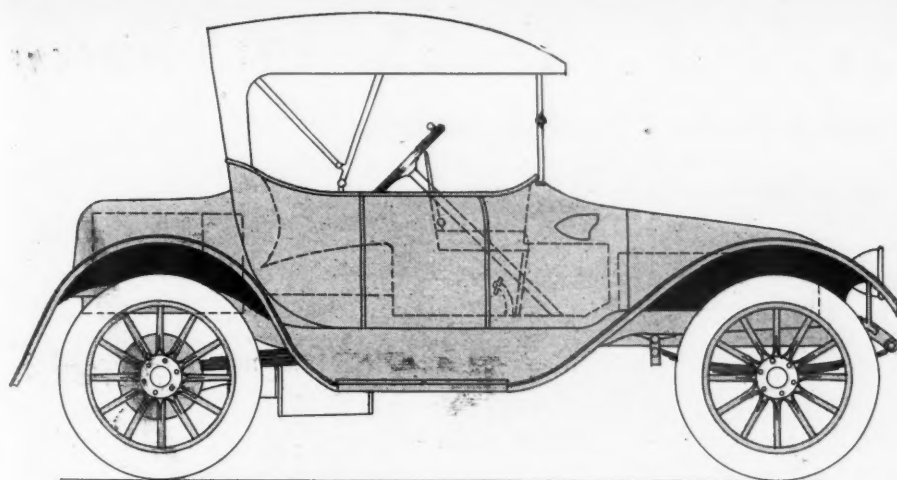
BRAKE PEDALS OF BUFFALO



PLAN OF BUFFALO ELECTRIC



INVISIBLE JOINT IN HOOD



BUFFALO ELECTRIC ROADSTER SHOWING SEATING ARRANGEMENT

made practically invisible by the employment of specially designed concealed hinges. By the construction of this hinge a close butt joint always is made when the hood is lowered. But to make it impossible for moisture to work into the battery compartment a curved gutter, shown in the illustration, is provided to carry off water to the side and through underneath the car to the ground where it can do no harm.

More Battery Space

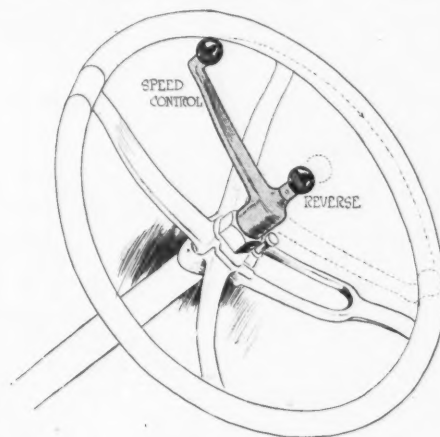
Battery space this year is large enough to accommodate any make of standard battery, including the Edison. There is no particular battery specified. When the Edison is used, seventy A4 cells are carried, being disposed forty in front and thirty behind. In the plan it will be seen how the rear battery space is much lessened externally by placing several of the cells in the center trap between the rear seats. When lead cells are installed the battery consists of forty-two fifteen-plate cells with a capacity of 140 hours of steady supply.

A double rain-vision shield is fitted and sashless windows in felt runways are used. The door window is operated by a mechanical lifter. The door is 26 inches wide and on opening it a step light is turned on automatically. The double-dropped frame lowers the floor about 3 inches and makes for easier entrance and much better body lines.

In the coupe, the front seats are of the swivel type but in the runabout, which also seats five, hinged seats which fold under the cowl are fitted. In both models the lighting switch is mounted conveniently on the steering column, as is also a lock switch, which cuts off the entire current and prevents the car from being started. An instrument board containing an ammeter, voltmeter and clock is located in the center of the dash. The space at either side is handy for luggage. Between the rear seats of the coupe there is further accommodation for packages, so that the interior can be left unincumbered. For the comfort of the driver the pedals are made adjustable through a range of sev-

made at the Buffalo Electric factory, including the hoods, which are in hammered aluminum.

At present only two models are on the market, though the coupe can be fitted with a folding landaulet back if desired.



SPEED AND REVERSE CONTROLLER ON STEERING WHEEL

eral inches, the change being easily effected by a telescopic link just under the pedal. The bodywork is designed and The price of the coupe is \$3,200. The price of the runabout is not yet fixed, but

it will probably be in the neighborhood of \$2,600. The wheelbase is 102 inches, the same chassis for both runabout and coupe bodies.

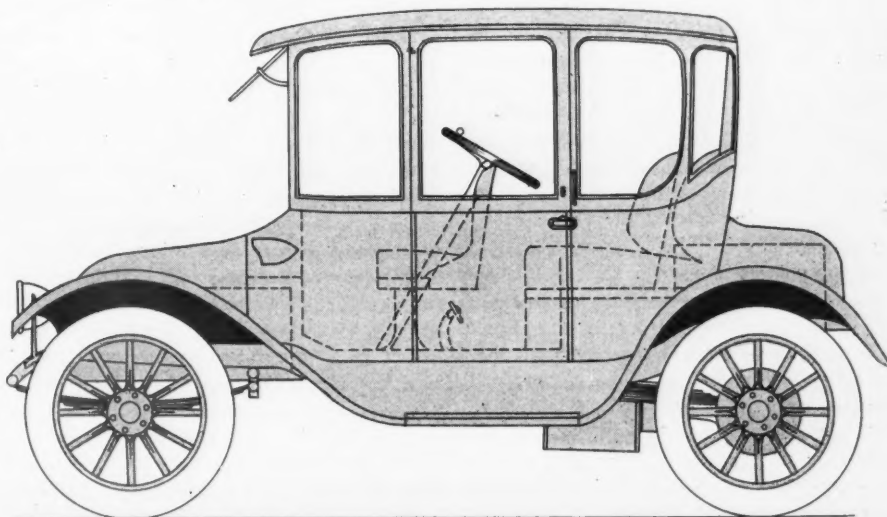
KENTUCKY TO EXAMINE DRIVERS

Louisville, Ky., July 10.—For the first time since the coming of the motor car, Kentucky this year will hold examinations and issue licenses to chauffeurs and demonstrators of motor vehicles. They will be conducted under the supervision of the new state board of examiners, composed of W. R. Rice, of Louisville; W. R. Meyers, of Columbia, and Thomas Byars, commissioner of motor vehicles. Pending their examinations, chauffeurs are required to take out temporary licenses, which may be secured by application to Commissioner Byars.

Attorney General Garnett gave an opinion last week, holding that anyone not an owner, part of whose duty is to operate a motor vehicle, is a chauffeur within the meaning of the new automobile law and must take an examination as such. For the convenience of those who are required to take the examination, meetings of the state board will be held in various cities of the state.

The new statute requires that every person desiring to be employed as a chauffeur must first file his application for a license with the commissioner of motor vehicles, stating his age, color, residence, and the length of time he has been operating a motor vehicle. Together therewith must be filed a certificate of character as to honesty and sobriety signed by three reputable citizens of the county in which he resides. The fee charged for the initial examination and license is \$2.

If after an examination the applicant is sufficiently qualified and not less than 18 years of age, the board of examiners will issue to him a license to operate motor vehicles in Kentucky for a period of 1 year. At the expiration of each year the license must be renewed but no further examination is necessary, a fee of \$1 being charged for a renewal.



NEW BUFFALO ELECTRIC COUPE SHOWING CENTRAL CONTROL

Aetna Company Making a 2-Ton Truck for 1915 Market

Detroit Concern Offers a Standard Machine

THE Aetna Motor Truck Co., Detroit, has brought to the public attention a sturdy 2-ton truck which is to be built to the extent of about 200 between now and the first of the year. The machine incorporates all standard parts, the concern assembling entirely with the exception that the fenders and other sheet metal parts will be constructed at the plant.

The motor used is a Hazard 4 by 4½ with a horsepower rating of from 25 to 30. The crankshaft has three bearings 2¼ inches in diameter, while the camshaft is supported on an equal number. Spiral gears drive camshaft and magneto, which is an Eisemann automatic advance type. The carburetor is a Schebler model R, which is governed to 15 miles an hour maximum.

Brown-Lipe Clutch

The clutch, incorporated with the motor, is a Brown-Lipe disk type, having twenty-four plates raybestos-lined. Three speeds forward are included in the selective type gearset, also of Brown-Lipe make. The gears have 1-inch face.

The drive to the rear is through a propeller shaft which connects with a worm-driven rear axle unit. This is a Sheldon construction which incorporates the David Brown type of worm gearing with the worm mounted above the worm wheel. The reduction is 8.6 to 1. Both worm and worm wheel and differential are mounted on Rhineland ball bearings, and the unit with its 2¾-inch axle shafts is said to be a 2 to 3-ton type.

Service and emergency brakes act on the brake drums which are a part of the rear unit. The wheels are of the artillery type, have fourteen 2-inch square spokes and are 36 inches in diameter. These carry 36 by 4-inch tires in front and 36 by 3½-inch duals in the rear.

The steering is left hand, the gear being a Ross make of the worm type. Control and emergency brake levers are in the center. The frame is of pressed-steel channel construction, having a sectional depth of 4½ inches, a width of 4 inches and being pressed from ⅜-inch material.

While the front springing is standard in every way, using Sheldon semi-elliptics, 40 by 2½ inches in size, the rear springing is unique. Three-quarter elliptics, underslung from the axle, are used. The Aetna concern is the first to adopt commercially this three-quarter elliptic form of rear springs, and have given it exhaustive tests, as has also the maker, the Sheldon Axle Co. Three-quarter elliptics, with scroll rear ends are found to be equally as strong as any other and at the same time tend to greater resiliency, which is an advantage with the solid tire equipment of the serviceable truck of today.



AETNA CHASSIS WITH PLATFORM BODY

Less wear and tear on the mechanism should result. These rear springs are 54 inches long, 3 inches wide, and have 11 leaves of ⅝-inch spring steel.

The standard wheelbase of the 2-ton Aetna is 144 inches, although this may also be had shortened to 130 inches if desired. The platform length on the long wheelbase is 13 feet, while the short wheelbase gives 11 feet. Platforms are 6 feet wide. The front wheel tread is 56¼ inches, while that of the rear is 59¼ inches.

Equipment includes electric lighting from a storage battery on the left running-board. The chassis alone is quoted at \$2,150, while with stake or express body, the price is \$2,250. The driver's seat costs \$50 additional. Other types of bodies are built to order.

Offices of the Company

The Aetna Motor Truck Co., which is incorporated for \$150,000, occupies a factory at Richmond avenue and Grand boulevard in Detroit. This plant is 60 by 125 feet of mill construction. The officers of the concern are J. George Wagner, president; Ernest E. Kinney, vice-president; William A. Eldred, secretary; J. J. Wilson, treasurer, and George Humbert, director.

MOTOR CONDITIONS IN CHINA

Washington, D. C., July 11—The department of state has issued the following report from Consul-General Thomas Sammons of Shanghai, China:

The interest in motoring, both among the native and foreign populations, is steadily increasing in Shanghai and other parts of China. The increase in the importation of American cars continues. As far as can be ascertained, the total net importation of cars for China during 1913 amounted to \$359,862, being an increase of \$180,676 as compared with the previous year.

A committee of twenty has been appointed by the Automobile Club of China, located at Shanghai, for the purpose of endeavoring to arrange, if possible, for spe-

cial trade discounts in purchasing cars and supplies. The committee also will endeavor to secure an increased number of native chauffeurs and provide suitable regulations for their employment. Another subject for serious consideration will be the extension of suitable roads throughout the Shanghai district and, later on, extending into the far interior of China.

Chinese chauffeurs, when properly trained, are considered among the best in the world. They are conceded to be practically without nerves and, for that reason, some of them may be put forward to enter international racing competitions. The salary of a good chauffeur at Shanghai ranges from about \$15 to \$20 per month.

MILWAUKEE CHECKING SPEEDING

Milwaukee, Wis., July 13—The traffic protection division of the public safety commission of Milwaukee is doing such good detective work and the influence on motorists of the division's car emblems is so far-reaching that the speeding evil has been reduced to a minimum and arrests since the division was organized 2 weeks ago are less than for any similar period in the history of the police department. The T. P. division consists of 150 Milwaukee motorists who are well known for their care and skill in driving and each carries emblems front and back designating membership in the division. The appearance of 150 cars with these emblems on the streets of Milwaukee has caused other drivers to hold themselves in check. T. P. members report violations of the laws to the chief of police on special blanks, and the police immediately issue warnings and, if the offense is sufficient, hale the drivers into court.

PATHFINDER INCREASES STOCK

Indianapolis, Ind., July 13—Notice has been filed with the Indiana secretary of state that the Motor Car Mfg. Co., Indianapolis, has increased its capital stock from \$250,000 to \$325,000. The company manufactures the Pathfinder car.

Stewart Light Delivery-a Truck With Few Parts

Weight Reduced and Strength Added to 1915 Model

IN bringing out its 1915 model, 30-horsepower 1,500-pound delivery truck, the Stewart Motor Corp., Buffalo, N. Y., has simplified it in many ways, made it lighter, yet stronger and more economical to operate. To begin with, there are 500 fewer parts and by the use of refinements in the general motor and chassis design, 25 per cent more mileage for the same amount of gasoline and oil is said to be obtained.

Unit power plant with three-point suspension is now used, this construction embracing a four-cylinder motor, inclosed disk clutch and sliding gearset. Left drive and center control are continued. The frame side members have been made straight so that their strength is a maximum and the fitting of the body also is facilitated by this change. Thermosyphon cooling has been substituted for pump-circulation, and fuel economy and increased power are the result of water-jacketing the intake manifold.

Changes in Cooling System

Change is also noted in the cooling system. Last year the circulation of air through the radiator, which is mounted on the dash, was aided by fan spokes in the flywheel, but suction now is produced by a belt-driven fan. A glass windshield has been added to the regular equipment, thus not only giving protection to the driver, but adding to the appearance of the car. Aluminum panels have displaced wood in the body construction. A Westinghouse electric starting and lighting outfit is furnished as extra equipment. A feature of the new truck is that all important units are quickly and easily removable.

Only one chassis model is manufactured, but it is equipped with many styles of bodies. The price of the chassis is \$1,500 and the bodies are extra. Prices of some of the bodies together with the dimensions of the loading space follow:

Type	Length	Width	H'ght	Price
Aluminum panel	7 ft.	45 in.	5 ft.	\$200
Open body	7 ft.	56 in.	58 in.	125
Stake body	7 ft. 6 in.	5 ft.		150
Democrat wagon	6 people and baggage			175
Undertakers' wagon	7 ft. 6 in.	43 in.	58 in.	800
Ambulance	7 ft. 6 in.	45 in.	5 ft.	850

The motor is a Continental with the cylinders cast in a block and the valves on the right side. The bore is $3\frac{1}{2}$ inches and the stroke 5 inches and it is rated at 30 horsepower. The exhaust manifold is separate and has individual passages leading from the four cylinders. The carbureter is a Zenith and is situated on the left side of the motor, the intake passage being cored through the cylinder casting. The oiling system is a force-feed, constant-level type. A plunger pump operated by an eccentric dam on the camshaft forces the oil to the various motor parts. Ignition is supplied by a Bosch DU-42 situated on the valve side of the motor.

The clutch is a dry plate, multiple-disk



PANEL-BODIED TRUCK MADE BY STEWART MOTOR CORP.

type contained in the flywheel with one set of steel plates and another set of raybestos-lined steel plates. There are nine plates in all and the surface is 230 square inches. The gearset is a sliding type, affording three speeds forward. It bolts directly to the bell-shaped housing that incloses the flywheel and clutch.

There are two universals in the drive-shaft and the rear axle is a floating construction of Timken make with a gear ratio of 5.5 to 1. The front axle also is of Timken design.

The Steering Gear

The steering gear is a worm and sector which permits of bringing a new quarter of the worm wheel in contact with the worm when it becomes worn. A feature of the steering mechanism is a ratchet control on the steering post to prevent slipping due to road shocks and vibrations.

Semi-elliptic springs are used front and rear, and 34 by $4\frac{1}{2}$ -inch pneumatics fitted with Firestone quick-detachable, demountable rims are standard equipment.

BRISCOE OUTLOOK

Jackson, Mich., July 10—The Briscoe Motor Co. has the production of its Briscoe cars well under way and is turning out from ten to fourteen of them daily. The design was first brought out in France and the company found it more practical, as the car involved so many French ideas, to use the metric system in the original drawings. To prepare it for American manufacture, it was necessary to change the drawings to the English units, and redesign the patterns, jigs and tools. Benjamin Briscoe, the president, said:

"We turned out our first American-made cars the first part of April, submitting them to the most strenuous tests. These tests were productive of results equal in all respects to the splendid records made by the models originally constructed in France.

"We began turning out cars regularly in May. Our production is now from ten to fourteen cars a day, and we expect by August 15 at the latest we will reach what we term our standard production rate of twenty cars per day. The cars that we have so far shipped are, we are most happy to say, giving the kind of service and satisfaction that we anticipated.

"Our first production has been to supply our dealers with cars. Our sales department has up to this time made contracts with about 200 dealers.

"We feel that there is a large number of people in this country and Europe that desire a high-grade small car; a car made of as good material, with as great care in workmanship; of as assured reliability; and of as highly finished artistic appearance as any of the high-priced cars; that is low in price, not because it is cheap, but because it is smaller, lighter, made by the use of special machinery, and can, therefore, be made and sold at a price a little more than the cheap cars.

"Manufacturing cars under a policy like this will mean that we are bound by our policy to conservative quantities of from twenty to thirty a day for the present at least; so that we can give to the production of each car that special attention that will differentiate it from a strictly factory-made proposition."

LONGUEMARE TO IMPORT

New York, July 14—Special telegram—Following the litigation between the Stromberg Motor Devices Co. and the Longuemare Carbureter Co. in New York the Longuemare company is preparing to push the importation and sale of its foreign-made carbureters. A preliminary injunction issued by Judge Hand affect only the making of carbureters in America. Longuemare is permitted to import and sell under a \$10,000 bond which it will file before July 22.

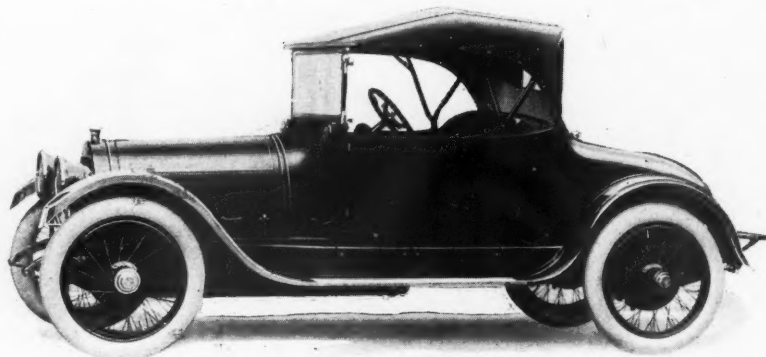
Stevens-Duryea Has Roadster With Disappearing Top

Canopy Folds Completely Into the Sides of the Body in New Car

STEVENS-DURYEA cars for 1915 follow very closely the general lines of the present product, although designated by only one model number, there are really two chassis, and in both of these there has been an increase of $\frac{1}{16}$ -inch in bore of the engine, so that the engine on the roadster chassis is now 4 $\frac{3}{4}$ by 5 $\frac{1}{2}$, and that on the touring chassis is 4 $\frac{7}{16}$ by 5 $\frac{1}{2}$. The roadster wheelbase is 131 inches and the touring wheelbase 138 inches, which is the same as that of the 1914 product. In other respects the chassis are the same as that of the earlier models, except that left drive is employed instead of the right drive, and that electric starting is fitted as stock equipment. The feature of the new line is a new roadster, which is arranged so that the top disappears completely inside of the body.

Disappearing Top

Continuous streamlines, characteristic of Stevens-Duryea bodies, have been carried out in this new type, the deck sloping gracefully from the back of the seat and rounded at the rear. The gasoline tank is entirely inclosed, and provision also is made for carrying two tires mounted on rims, or one wire wheel mounted and extra tire, under the deck, completely inclosed and out of view. The top is supported by mechanical means by neat but rigid joints, which cause it always to follow a certain path in folding into and being withdrawn from the body; it is self-supporting and when up requires no braces of any kind, being rigidly fastened to the windshield supports in the same manner as in the Stevens-Duryea touring cars. When the top is folded the concealing compartment is completely covered by the upholstery. The opening is also covered by the upholstery when the top is in use, thus making a neat, finished appearance, in either position, as well as affording full protec-



NEW STEVENS-DURYEA ROADSTER WITH TOP UP

tion to the top from dust and dirt when concealed.

As furnished on the touring car the top is of the one-man type, being supported from the rear, with no bows at the side of the front and rigidly attached in front to the windshield. It can be raised or lowered easily by one person. When in the folded position an envelope is provided which covers the entire top.

Another novel feature to be found is the way in which provision has been made for carrying the curtains when not in use. Pockets have been provided between the lining and top covering of the top at both sides, front and rear, for carrying and entirely concealing the curtains, which are of the quick-attaching type, and can be withdrawn readily from pockets and easily attached from the inside of the car. In this way protection can be had from the elements almost immediately, as the occupants of the car are protected while the curtains are being placed in position.

New Auxiliary Seat

A new type of auxiliary seat is employed in the seven-passenger touring cars. Each seat has one upholstered arm on the inner side, the upholstered arm rail providing a rest on the outer side. The construction allows for folding backwards and sidewise against the side of the tonneau, or when in this position can be tipped forward in front of the entrance, thus removing these extra seats entirely out of the way of passengers occupying the rear

seat and obscuring them from view of those outside of the car.

In addition to the complete line of open and inclosed cars as marketed by the Stevens-Duryea company during the season of 1914, the company offering a seven-passenger landaulet, built on 139-inch wheelbase chassis. All the windows are of the sashless type, automatically adjusted and the back of the top is equipped with a patented

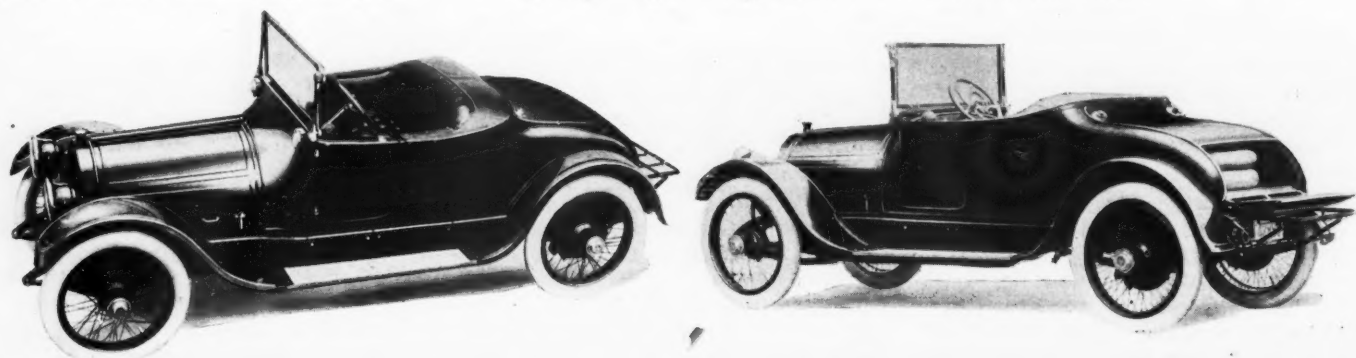
mechanical device that will allow it to be raised or lowered by anyone seated in the rear compartment.

The Electric System

In the electric ignition system, the Stevens-Duryea company has retained the two independent Bosch high-tension magneto and battery systems of ignition with synchronous coil, high-tension timer distributor and instrument board switch. Two sets of spark plugs are furnished which, with the independent systems of ignition, eliminate chances of trouble in this connection.

Wiring of the lighting and starting systems is enclosed in brass-armoured tubing, which prevents all leakages and deterioration of the insulation from oil fumes and heat from the engine. In addition to the regular lights, as supplied on all cars, there is also a light in the tonneau of the touring cars which illuminates the step as well as the floor of the car. An electric lamp is also provided on the instrument board for illuminating the clock, speedometer and other instruments and provision has been made for dimming the electric headlights when this is desired.

The roadster sells at \$4,550. Stevens-Duryea unit power plant, suspended at three points continues to be a feature of these cars as it has been for many years. The disk clutch, progressive three-speed gearset, floating axle and 37 by 4 $\frac{1}{2}$ -inch tires are continued.



TWO VIEWS OF STEVENS-DURYEA ROADSTER WITH TOP DOWN, SHOWING, AT RIGHT, SPARE TIRE CARRIER

The Motor Car Repair Shop

WATCHING pitmen at a race meet will bring out some very clever devices for doing things quickly and well, for it is time that is so valuable in a race. At the recent Sioux City 300-mile race a number of the pits employed a novel method of filling the radiators of the cars. In order to do away with two operations, that of filling a can with water and then pouring the water from the can through a funnel into the radiator, a combination funnel and can was used. One form of this is shown, in Fig. 1. The funnel is made large enough to hold about 2 gallons and it is fitted with a handle so that it can be carried easily. At the bottom of the funnel and on the inside is a wedge-shaped block of wood to which is fastened a piece of brass rod. The rod is bent as shown in order to keep the wood block at the bottom of the funnel. When the funnel is filled the block drops to the bottom and closes the opening and when it is desired to fill a radiator the operator pushes the block upward and holds it there until the water has drained. Many modifications of this could be made for ordinary use. For example, a large stop cock could be fitted to the bottom of an ordinary funnel, or a cork could be attached to a long rod so that when the rod is pushed upwards the cork will get to the top and float, thus relieving the

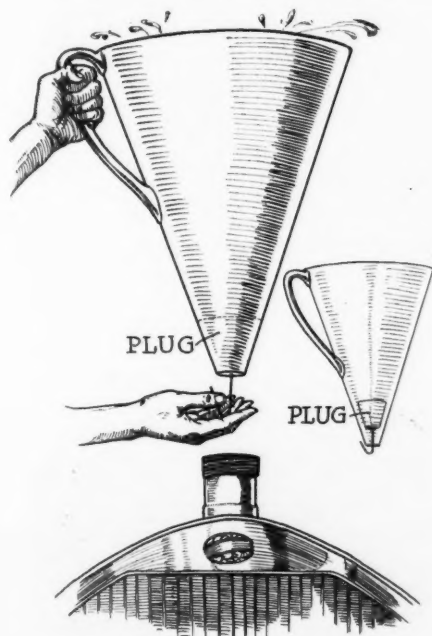


FIG. 1—A HINT FROM A RACING PIT

The above illustration shows a combination filler can and funnel which was used by one of the pits at the recent Sioux City 300-mile race, to make quick and easy work of filling the radiator. Instead of the piece of wire attached to a wooden block or cork, a large control cock may be used, but in this case the water would not flow out as quickly

Suggestions from Racing Pits

WHEN a screwdriver bit refuses to take firm hold of a screw slot, a little emery dust in the slot will help.

Tires are worn out more rapidly if the car is operated quickly than if a good average speed is held. Not only will the heat generated in the tire, cause it to wear, but when the car is driven over rough roads at a fast rate, the tires at times leave the ground. Every time they again touch the ground the rubber is literally ground off.

In making carburetor adjustments many owners do so when the motor is cold and fail to give the motor a chance to operate on any one adjustment. If one could watch the expert adjusters before contests at the Indianapolis and Sioux City speedways, much valuable information could be gained. The general method is to give the carburetor one adjustment and then send the car around the track for a lap or two. If it fails to run well it is adjusted again and even if it misfires badly it is sent around the track, on the chance that the misfiring will be cured in the lap's running. Owners should take advantage of this method and after adjusting the instrument do not expect the motor to show results immediately, should it be cold.

It is a good plan always to keep a small box of odds and ends in the car. This box may not be larger than 4 by 6 inches and in it should be kept old nuts and bolts, wire, any spare parts which have been discarded, etc. On a tour these parts are sometimes invaluable and recently a tourist who had such a box found that when it came to making road repairs many of the old parts were just the things needed. In addition to the parts named a few extra tire valves should be carried.

In making all adjustments about the motor, such as valve tappet resetting, do so when the engine is hot. The metals expand and when hot have reached their maximum for every day running.

A car will stop more quickly if the brakes are applied intermittently than if they are jammed down and held down, thus sliding the rear wheels. Skidding is prevented also by doing this. A locomotive engineer will rarely apply the air brake harshly, but instead will apply and release alternately until the train is halted.

Many motorists despise tire chains for the reason that they do not like to remove muddy chains and place them in the bag provided. A good way of getting the chains into the bag without soiling the hands is to grasp the chains between the thumb and forefinger, hook them onto some part of the car and then slip the bag over the chains.

operator of the trouble of holding the rod.

If a control cock is used the water will not flow out as quickly as if the other method is employed. The device could be so arranged that merely touching the hooked rod to the filler neck allows water to flow out of the funnel.

On Using a Grease Gun

In filling grease compartments with a gun many motorists make the mistake of

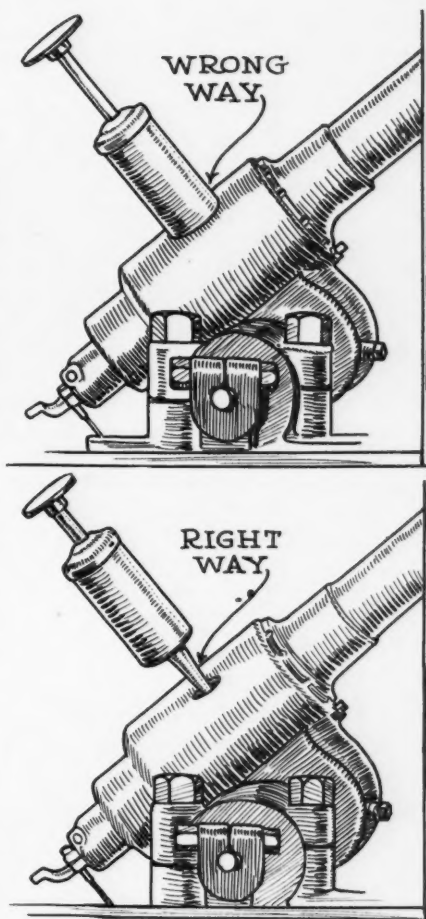
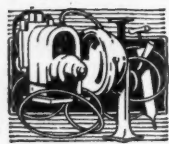


FIG. 2—PROPER USE OF GREASE GUN

In using a grease gun the nozzle should always be inserted so that there is a space around it, as shown in the lower illustration. If this is not done there is no outlet for the displaced air and the result is the grease will squeeze out around the nozzle. In the upper illustration the operator would find it hard work to move the gun plunger

pushing the gun spout into the hole as far as they can. This usually causes the gun to be difficult to operate and most of the grease is squeezed out of the case and around the gun nozzle. In the illustration in Fig. 2 is shown the right and the wrong way of using a gun. It should be remembered that when grease is injected into a case, it displaces a certain amount of air and this air must leave the case before any grease will enter. In the upper illustration the gun covers the hole completely so that no air can get out while in the lower, the end of the nozzle is in the hole and there is sufficient room around to let the displaced air out.

It might be said in this connection that few motorists are careful enough to see that no dirt from around the plug gets into the hole. Before a plug is removed the space around it should be cleaned thoroughly, this applying to all oil hole coverings.



The Accessory Corner



Robbins' Ford Bodies

WITH inclosed passenger car bodies for Ford cars being manufactured by a number of concerns and sold at a comparatively low figure, many owners of these vehicles transform the open car to a closed one at the first sign of cold weather. A line of Ford inclosed bodies is being manufactured by Irvin Robbins & Co., Indianapolis, Ind., which consists of three styles, a three-passenger coupe, a four-passenger sedan and a five-passenger sedan. A commercial body is also made. These bodies sell for from \$100 to \$500 and because of the standard dimensions may be fitted to the model T chassis in a short time. The Robbins bodies are said to be finished in the best fashion, having double-adjusting windshields, dome lights, sashless windows, carpeted floors and many other appointments which will appeal to the owners. The illustrations in Fig. 1 shows three passenger-car bodies and the commercial body also.

Canvas Tread Tires

A rubberized canvas tire which is claimed to be exceedingly strong and immune to punctures, blowouts, etc., has been brought out by the Canvas Tread Tire Co., New York. The tire consists of 13 layers of rubberized canvas vulcanized together with an extra ply of rubber between each ply of canvas, as shown in Fig. 6. The

bead is of fiber. The maker claims unusually wearing qualities for this construction and adds that it shows excellent non-skid qualities. The prices range from \$24.95 for the 30 by 3½-inch size to \$60.60 for the 37 by 5-inch.

Steam Tire Curing Bag

Under the name of the Twentieth Century steam curing bag, the K. & W. Rubber Co., Denver, Colo., is marketing a tire curing bag which is claimed to be superior to an air bag because there is less danger of overcuring and burning. The long life of the Twentieth Century is another claim for it, the only wearing part being the curing surface, which is said to be easily replaced at low cost. It is stated also that this device makes it an easy matter to affect both an inside and outside cure and from 200 to 300 cures can be obtained without replacing a part. With the exception of the curing surface all the parts are made of non-rusting metal. The bag about to be placed in a tire is shown in Fig. 2. The prices range from \$20 for the 2½-inch size to \$32.50 for the 5-inch.

Positive Tube Vulcanizer

A new type of steam vulcanizer designed for tubes only has been brought out by the Positive Supply Co., Davenport, Ia. It is especially desirable for use in small repairshops and private garages and is constructed so that it can be



FIG. 2—STEAM CURING BAG

It is stated that this bag gives better results than the air bag and that there is but one part which requires replacement and that is the curing surface, which can be replaced easily. The illustration shows an operator in the act of placing the bag in the tire to effect a cure

mounted firmly on the work bench or other convenient place. In repairing a tube, the repair rubber is placed on the tube and the latter clamped in the vulcanizer into which a measured amount of gasoline and water has been placed. The fuel is ignited and when it has all burned the repair is complete. The Positive, shown in Fig. 3, weighs 3 pounds and sells for \$1.50.

Polarine for Ford Cars

An evidence of specialization, is Polarine oil as it is now produced by the Standard Oil Co. Years ago the company manufactured several grades of oil recommending them for different types of engines, for until motors were generally standardized there was need of several grades. It now concentrates on one grade of oil designed to suit the present day mechanical and temperature conditions of the modern motor. The one grade of Polarine

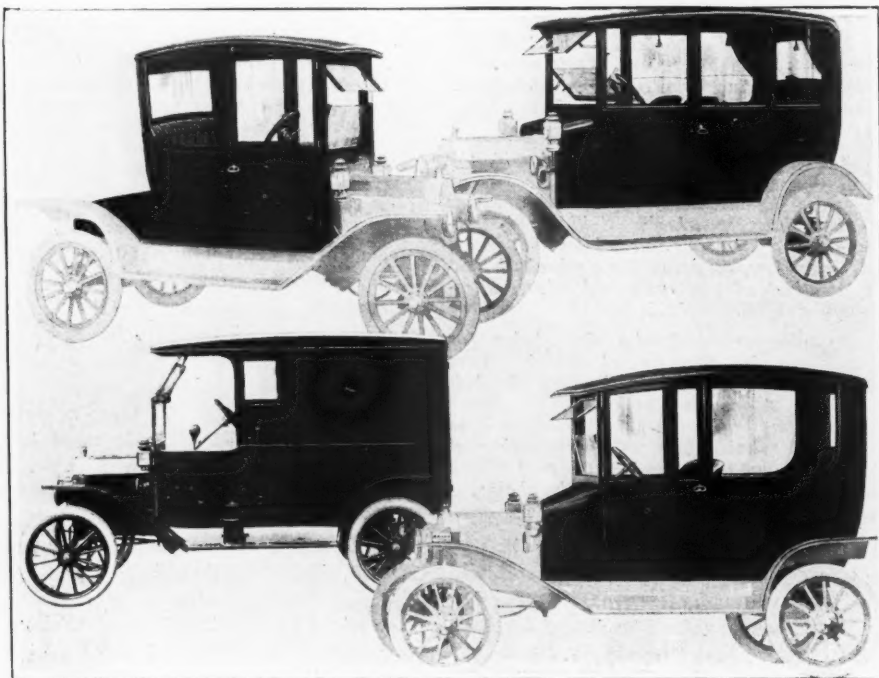


FIG. 1—ROBBINS INCLOSED BODIES FOR FORD CARS

The above illustration shows three passenger-car and one commercial-car body brought out by the Robbins company, Indianapolis, to be mounted upon a Ford chassis. These bodies have standard dimensions and can be fitted with little trouble. The two upper bodies are called the coupe and five-passenger sedan and the lower ones the commercial and four-passenger sedan

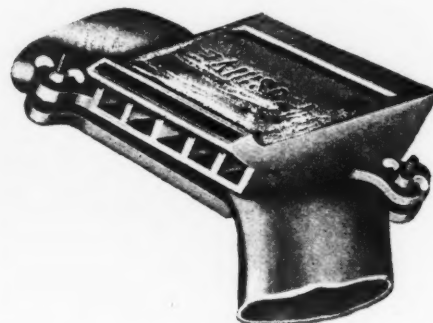


FIG. 3—A NEW TUBE VULCANIZER

The Positive Supply Co. has introduced a new vulcanizer shown above which is designed for inner tubes only. It is of the steam type and requires little attention after gasoline and water have been placed in their respective compartments

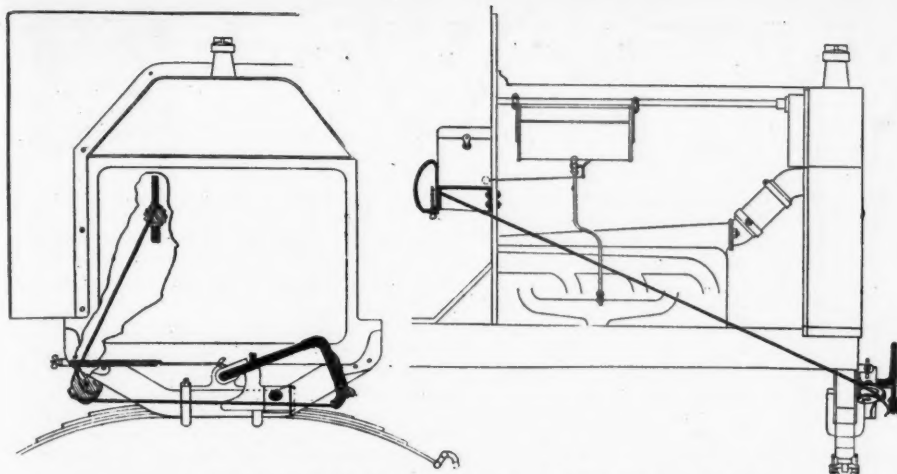


FIG. 4—A NEW CRANKING SYSTEM FOR SMALL CARS

This cranker, which can be easily installed on Fords, Overland, Studebakers and similar cars, is operated by the pulling of a lever on the dash of the car. One quick pull of the lever turns the motor over with that jerk necessary to insure a start

is produced for all cars from Ford up to the costliest foreign makes.

Gahm Mechanical Starter

A very simple mechanical starter operated by pulling a handle on the dash of the car and which is especially applicable to

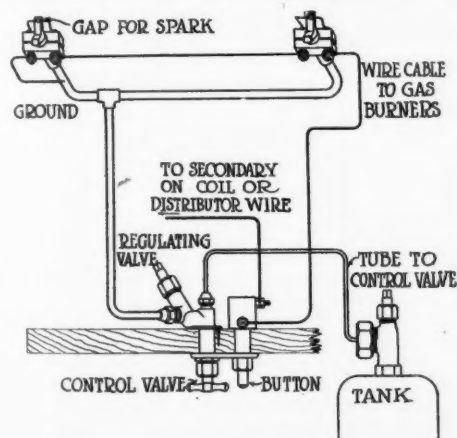


FIG. 5—AUTOMATIC GAS LIGHTER

The apparatus shown above is designed to light acetylene lamps from the seat of the car by simply pressing a button. An electric spark from a battery or magneto is used for furnishing the current

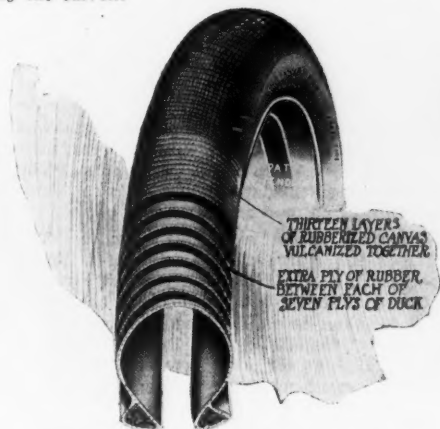


FIG. 6—A CANVAS-TREAD TIRE

A casing made of rubberized canvas is claimed by the Canvas Tread Tire Co., New York, to outlive the ordinary tire. The casing consists of 13 layers of rubberized canvas vulcanized together

Ford, Overland and Studebaker cars, is announced by the Gahm Mfg. Co., Streator, Ill. The starting device consists of a special crank, as shown in Fig. 4, which is operated by a cable attached to a hand lever. Pulling of the lever causes the cable to turn the crank which gives the motor a good swing. The installation of the Gahm is an easy matter for an owner handy with tools.

Line of Ford Bodies

Many owners of Ford roadsters are desirous at times of using the car as a delivery vehicle and again as a touring car in order to carry additional passengers comfortably. A special line of bodies which can be attached to the Ford roadster to convert it into a touring car or commercial vehicle has been brought out

by the Auto Remodeling Co., Chicago. With the equipment supplied by this concern, a Ford owner can use his car as an ordinary roadster without change, as a commercial car for packages, or as a touring car. Four bolts is all that is necessary to attached to apply the body, all four being reached without getting underneath the chassis. To further facilitate the work a special socket wrench is provided for tightening. The construction and finish of these special attachments are almost exactly like the roadster body originally furnished with the car. In the illustrations in Fig. 7, the equipment is shown on and off the chassis. The commercial body sells for \$35, and the tonneau with a top for \$85.

Automatic Gas Lighter

A very simple automatic lighter for acetylene lamps has been brought out by the Ideal Brass Works, Indianapolis, Ind., this lighter using any available high-tension current and being controlled from the driver's seat. It consists of a control switch for the current and leads to the gas tips where wire is bent so that a small gap is made. When the control switch, in the form of a push button, is pressed current flows across the gaps, which are near the gas tips, and if the gas is turned on it immediately ignites. The illustration in Fig. 5 shows the various connections. It sells for \$5.

Whitney Keys for Ford

Ford owners as well as garagemen, who do much Ford business will be interested in the announcement of the Whitney Mfg. Co., Hartford, Conn., that its keys are now being put out in boxes containing twelve assorted sizes for Ford cars only.

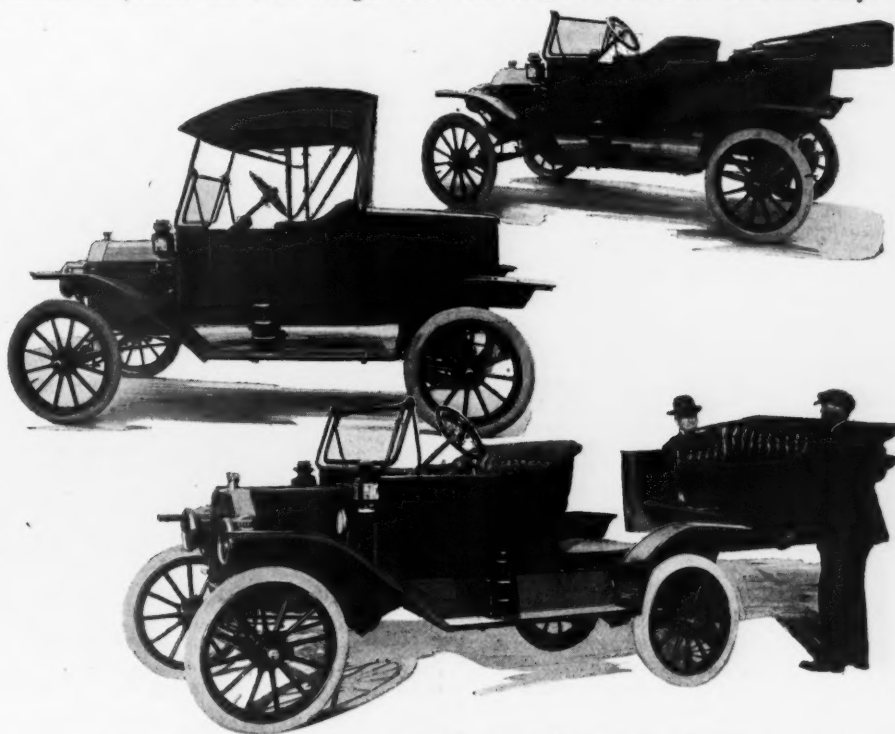


FIG. 7—A LINE OF DETACHABLE BODIES FOR FORD CARS

With these bodies a Ford roadster may be converted to a touring car or package-delivery car in a short time. The lower illustration shows two men slipping the tonneau in place. Four bolts only are necessary to attach the touring body



From the Four Winds



DAWSON'S Complete Recovery Assured—

Joe Dawson, who was injured in the 500-mile race at Indianapolis, May 30, while driving a Marmon car, is much improved. He is still in the hospital and it may be several weeks before he is able to be out. It is announced at the hospital, however, that his complete recovery is assured.

Wants Parcel Post Trucks—Cleveland's parcel post business has grown so rapidly that Postmaster Murphy has asked for eight motor trucks to handle it. In a letter to Postmaster General Burleson recommending trucks, he states that motorcycle boxes are inadequate.

Speedway at Sioux Falls, S. D.—Sioux Falls, S. D., motorists have purchased an 80-acre tract of land in the southern section of the city, which they propose to convert into a speedway. It is the intention of the purchasers to put about \$50,000 into the project, and it is planned to have it completed in time for a race meet in the summer of 1915.

New Signs in Los Angeles—Directing motorists to all points of southern California from Los Angeles as a hub, new signs at Seventeenth and Broadway have been erected by the Automobile Club of Southern California. On each of the four corner electrolight posts rests a large brass sign carrying the names of all important towns in all directions from Los Angeles.

Spark Plugs at 5 and 10 Cent Store—Someone once said that eventually the 5 and 10 cent stores would be selling motor cars and probably thought he was a humorist. This week the American Five and Ten Cent Store Co., with stores in St. Louis, placed on sale an accessory—a spark plug. The store installed in its twenty-five-cent department motorcycle and motor car spark plugs which it sells at 25 cents, and claims are worth up to \$1.50.

Plan Toronto-Hamilton Highway—First among the Canadian roads on the programme of the provincial highways commission which will be surveyed and constructed will be the road extending along the lake shore from Toronto to Hamilton. It has been decided to construct a substantially paved highway 20 feet in width and to have it ready for traffic in the fall of 1915. Fourteen men are now engaged in a survey of the district and following their report legislation will be introduced to allow the letting of contracts.

Outline Red Star Route—A delegation of good roads boosters from Norton, Kas., Elwood and Broken Bow, Neb., met in Lexington, Neb., recently. The purpose of the meeting was the laying out of the Red Star route, which will connect with the Lincoln highway at Lexington. The route runs north to Broken Bow and south to the Oklahoma line through Norton and Dodge City, Kas. The meeting passed a resolution asking the county commissioners to have a highway commissioner who would be responsible for all roads in the county, making them uniform.

Fall Motor Show Under Canvas—The fall motor show, to be held at the Indiana state fair, Indianapolis, the week beginning September 7, promises to eclipse any motor show ever given by the Indianapolis Automobile Trade Association, under whose auspices it is to be held. The committee in charge of the show consists of Fred I. Willis, of the Hearsey-Willis Co.; George O. Wildhack, general traveler for the Oakland Motor Car Co., and John Orman, of the Premier Motor Mfg. Co. A tent, 159 feet wide and 325 feet long, is to be used. This will give 20,300

square feet of exhibiting space, exclusive of aisles. It will be located on a prominent part of the fair grounds, near the coliseum. Until August 22, space will be sold at 10 cents a square foot, members of the association to be given the preference. After that date the price will be increased to 20 cents a square foot.

Cars, Valued at \$823,000, Stolen—During the year ending June 30, motor cars valued at \$823,000 were stolen in the streets of Detroit. This is an increase of \$214,000 over the previous 12 months. Nearly 90 per cent of the stolen cars were recovered through the efforts of the police and detective departments.

Abandon Summer Club House—Because the owners of the property, it is alleged, did not live up to the lease, the Hoosier Motor Club of Indianapolis has decided to vacate its summer club house, Crows Nest, northeast of Indianapolis. A committee has been appointed to find a new location. The club has closed a membership contest, Frank Selmer, H. S. Hunter and B. E. Griffey securing fifteen members each and receiving diamond

pins; W. K. Miller, C. F. Zwick, Guy B. Wright, Fred I. Willis, C. T. Strauss, P. C. Rubush, R. M. Seeds, George A. Weidley, James L. Gavin and Homer Lathrop secured five members each and received gold pins.

Trucks Increase in Chicago—There has been an increase of 3,408 commercial cars in Chicago since 1911, according to figures compiled by Edward Cohen, city collector. During the same period is noted a decrease of 1,789 two-horse wagons. In April of this year only seventeen four-horse vehicles were in use in Chicago. The 3,408 commercial cars are divided into 2,012 delivery wagons of less than 1-ton capacity, while 1,396 are heavy duty trucks.

Automatic Turntable for Motor Cars—A turntable which works automatically is in use in Pasadena, Cal. The car is driven upon the table until one of the rear wheels engages a pair of rollers set flush with the floor of the platform. The engine is then reversed and the action of the wheels on the rollers revolves the entire platform. The differential on any machine allows one wheel to turn independently of the other.

Motor Patrols Make Good—The nine Packard patrols which the police department of the city of Detroit is using covered a total of 80,188 miles during the year ending June 24, 1914. The average mileage per patrol was 8,909 miles, while the average daily mileage per vehicle was 24.4 miles. A total of 50,613 runs were made during the year, or an average of 5,623 per car, or over 15 per day per car.

Use Car to Move House—While moving a two-story house in San Francisco recently, it became necessary to relieve the horse that was furnishing the motive power. It was also necessary to keep the house moving so as not to block traffic. A Studebaker machine, with irreversible steering gear, came to the rescue, and in a few seconds was on the job. The wheels were set at the proper angle, the clutch released on the low gear and the car started on its rounds without attention or driver, maintaining the circle truer than any horse could do.

Motor Delivery System a Success—The merchants' co-operative delivery system instituted at Waukesha, Wis., under the direction of Charles Ham, a local dealer, is working out unexpectedly well. Nine light delivery cars are in service and on July 1, the first day of the 30-day trial period, 800 orders, averaging 5 packages an order, were delivered. The old system required nineteen horse-drawn rigs and the daily limit was 450 orders. Mr. Ham's new system can take care of 1,300 orders in the same time. The new plan is effecting a saving of 40 to 50 per cent in cost to merchants.

Marking North and South Routes—The Lake-to-River Road Association of Milwaukee, which has laid out and marked a main-traveled thoroughfare from Lake Michigan, at Milwaukee, to the Mississippi river at two points, LaCrosse, Wis., and Prairie du Chien, Wis., with Madison, the state capital, as the junction point, is now working on a north and south route from Freeport and Rockford, Ill., to Madison. The Freeport-Madison route will be through Monroe, Wis., and the Rockford-Madison road will be via Beloit and Janesville. The association has been granted permission by the Bell Telephone Co. to use telephone poles along each route for painting markers. Every fifth pole will be marked and a distinctive sign will be used for each route.

Coming Motor Events

SHOWS AND CONVENTIONS

September 7—Indianapolis show.
September 26—October 6—Berlin show.
October 7-17—Electric vehicle show, Grand Central Palace, New York.
October 17-24—Show, Pittsburgh, Pa.
October 19-21—Convention of Electric Vehicle Association of America, Philadelphia.
October 16-26—Paris show.
November 6-14—Olympia show.
November 14-21—British commercial car show, Islington.
November 23-28—Olympia light car show.
November 9-14—American Road Congress, Atlanta, Ga.
January 2-9—New York show.
January 23-30—Chicago show.

CONTESTS

July 18-19—Speedway races, Seattle, Wash.
July 20—Track meet, Cambridge, Ill.
*July 30-August 3—Beach meet, Galveston, Texas.
August 15—Le Mans cyclecar grand prix race.
July and August—French army truck subsidiary trials.
August 2-9—Six day cyclecar reliability in French Alps.
August 16—Coupe Internationale; light car race, Le Mans.
August 17—Grand Prix of France, Le Mans.
*August 21-22—Road races, Elgin, Ill.
September 5—Track meet, Milwaukee, Wis.
September 6-7—Italian grand prix.
September 7—Track meet, Providence, R. I.
September 9—Road race, Corona Beach, Cal.
*September 12—Track meet, Hamline, Minn.
September 14—Track meet, Milwaukee, Wis.
September 15-16—Track meet, Norfolk, Neb.
September 18-19—Track meet, Hutchinson, Kans.
September 18-26—Track meet, Springfield, Ill.
October—Gallion hill climb, Paris.
October 2-3—Track meet, Oklahoma City, Okla.
October 2-3—Track meet, Trenton, N. J.
November 8-11—Track meet, Shreveport, La.
November 15—Kerosene motor tests, Paris, France.
November—El Paso-Phoenix road race.
November—Los Angeles-Phoenix road race.
November—Albuquerque-Phoenix road race.
November—Track meet, Phoenix, Ariz.

*Sanctioned by A. A. A.

Malcolm MacKinnon, secretary of the association, has interested citizens in various towns along the routes to pay the cost by popular subscription in the form of \$2 memberships.

Harvests Oats With Motor Car—Seth Hartley, of Colton, Cal., uses his Cadillac machine to gather in his crop of oats. Attaching his mower to the car, he covered 35 acres, and after doing the mowing with the car, attached the rake to the car and performed the raking. The work was done in half the time required with horses.

Erecting Danger Signs in Ohio—Secretary H. K. Laird of the Columbus Automobile Club is superintending the work of erecting about 600 danger and direction signs in central Ohio. All of the danger points will be marked and directions given. The roads leading into Columbus for a distance of 50 miles will be looked after by the Columbus Automobile Club.

Husband Reckless Driver; Asks Divorce—Fast and reckless driving is the novel basis of a suit for divorce as brought by Mrs. Rosa Schultz of Des Moines in the district court. To make it more exasperating, it is the lady's own car. She alleges that her husband, Philip H. Schultz, has driven her car through the city streets at breakneck speed while she was a passenger. She also alleges that he has driven the car over curbstones. Such actions, she alleges, are of the class best designated as cruel and inhuman treatment.

Blames Garages for Fires—According to Simon Kellerman, Jr., statistician of the Illinois State Firemen's Association, the "mushroom" growth of public and private garages and the increased use of gasoline for motor cars is one of the chief reasons for the rapid increase of fires throughout the state and the country in general. During the year of 1913 there were 16,919 fires in Illinois—but he does not tell how many were caused through the use of gasoline in garages—which cost the insurance companies \$7,380,880.

Joint Meeting of Four Clubs—More than 100 members of the Taunton, Mansfield, Attleboro and Norton motor clubs of Massachusetts met last week for a joint consideration of motor problems at the Wampanoag Motor Club, Taunton, Mass. President Crandall of the Taunton club called the meeting to order and more than an hour was spent in discussing motor legislation and highways, and other topics. Secretary James Fortesque and Attorney Renwick of the Massachusetts State A. A. talked on motoring. A Dutch supper followed, at which Daniel H. Lehan was the host.

Tackle Gasoline Tank Problem—An ordinance has been submitted to the Detroit council ordinance committee, providing that no gasoline tanks be located under a paved street or a public driveway, that tanks must be buried 3 feet below the surface of the ground and must be at least 10 feet from a building, and that no tank should have a capacity for more than 500 gallons. The city boiler inspector is to inspect all tanks and there is to be a fee of \$3 per tank. The fire department and the department of public works are to give their O. K. as to the proposed location of tanks.

Iowa Counties Plan Highway—The Tri-County highway from Creston, Ia., to Atlantic, Ia., by way of Orient, Greenfield, Fontanelle, Bridgewater, Cumberland and Massena, has been organized. The officers of the association are: President, D. P. Hogan, of Massena; vice-president, Paul S. Junkin, of Creston; secretary and treasurer, P. P. Sullivan, of Bridgewater. Directors are: E. B. Arnold, of Creston; E. Neville, of Orient; George Musmaker, of Greenfield; Dr. Gibbon, of Fontanelle; John McDermot, of Bridgewater; W. W. Slocum, of Massena; B. Z. Harrison, of Cumberland, and L. H. Pine, of Atlantic. The Tri-County highway

will be marked with the letters "T. C." in yellow on a black background, the markings to be on a board or galvanized iron, 14 by 18 inches.

Suggests Mirrors on Corners—Chester I. Greene, of the Worcester, Mass., is advocating the placing of mirrors on dangerous curves in and about Worcester county, there being a number of bad places there, notably Collier's corner in Leicester. There is a mirror now on the highway in Bedford, Mass., placed there by the owner of a garage in that town.

Plan for Cyclecar Show—President E. P. Blake, of the New England Cyclecar Association is sounding out the members relative to a show to be held in Boston some time during the fall, possibly in October. Some of the members favor having a week's exhibition in a hall, while others think it should be held out doors on some one of the ball parks where gymkana events could be arranged to attract visitors.

Trucks for Garbage Collection—A complete change in the system of collecting and handling Cleveland's garbage is planned by Service Director Sidle. With a view to establishing a system on a par with other cities he will ask the council to authorize the issuance of \$100,000 bonds to cover the cost of three new collection stations and motor truck equipment, doing away with wagon collections.

Imperial Valley Roads Logged—Transcontinental tourists using the southern route will be interested in knowing that the division of the road between Yuma and Los Angeles through the Imperial valley has been completely logged and mapped. This work was performed and the map issued by the Automobile Club of Southern California. All of the springs and water holes in the desert country between Mecca and Brawley are shown, and the quality of water in each is given.

Cyclecar Reliability Run in September—What is said to be the first cyclecar reliability run in America will be staged September 5, 6 and 7, from Newark to Philadelphia and return. Entries close August 20. The entry fee will be \$10 per car and blanks and information may be obtained from Dr. Charles G. Percival, Tenneck, N. J., chairman of the national touring committee of the Cyclecar Association of America, which has sanctioned the run. The itinerary follows: Sept. 6—Newark, New Brunswick and Trenton, N. J.; Philadelphia, Pa. Sept. 6—Philadelphia, Ancon and Atlantic City, N. J. Sept. 7—Atlantic City, Trenton and Brunswick. Finish—at Newark at 5 p. m. Total, 300 miles.

Driving Old Car Across Continent—A few days ago A. E. Moore and Patrick Kennedy started from Los Angeles on a tour to New York, in a 4-cylinder Studebaker, constructed in 1909 and which has already 64,000 miles to its credit. The tour was started as the outcome of a wager for \$1,000 concerning the road value of such an old car. Some friends of the motorists claimed that such a long motor trip could not be made in such an old vehicle without it breaking down. Moore and Patrick agreed that not a single part on the car is to be replaced and that whatever repairs are to be made must be done by tools carried on the car.

Improving the Roosevelt Highway—Steps have been taken to improve the Roosevelt highway, which is one of the most picturesque in the southwest, and to have it in fine condition by the time the San Francisco exposition opens. At a meeting of representative citizens of Globe and Phoenix, which was held a few days ago, concerted action was taken regarding improvement of this highway. Assurances were received from Charles S. Fee, passenger traffic manager of the Southern Pacific, that if the highway is put in first-class shape an arrangement will be made whereby transcontinental travelers will

be given the option of making the trip by motor car between Globe and Phoenix instead of continuing that stretch of the journey by rail. On the division of the highway between Roosevelt and Globe a force of convicts are now at work.

Will Arizona Lead?—Before the end of 1914 Arizona will have more motor cars, in proportion to population, than any other state. This prediction has been made confidently by Secretary of State Sidney P. Osborn, who issues licenses to motor vehicles. Arizona's population is approximately 250,000 and Osborn has issued 4,250 1914 numbers. He thinks that the total will go to 5,500 before the end of the year. Last year 3,093 cars were registered. New York had more cars in proportion to population than any other state, California being second and Arizona third.

Will Drive Truck to Fair—Charles Courtney of Hartford, Wis., is about to start on one of the longest journeys ever attempted with a motor truck. The Kissel Motor Car Co. of Hartford is completing a 3-ton chassis with carryall body for Mr. Courtney, who plans to start out about July 20 on a 3,000-mile tour, winding up at the Panama-Pacific exposition in San Francisco at the time of its opening in February, 1915. En route Mr. Courtney will visit cities where conventions, local, county or state fairs and other gatherings are being held, and expects the revenue he derives from passenger fares to cover the expenses of the trip. The "traveling motor bus line" is a new idea and doubtless will be copied by other enthusiasts in other parts of the United States.

Motor Service for Country Shoppers—The operation of motor car service for the benefit of country shoppers is one of the novel uses to which that vehicle is put in Texas. Miss Tempy King of Smithfield hit upon the idea of establishing a transportation line between her town and Fort Worth for the exclusive use of the women of the town and adjacent farms who may want to shop in the larger city. The distance between Smithfield and Fort Worth is 15 miles. The plan is meeting with favor on the part of the women of the community and each day Miss King carries a load of passengers to Fort Worth. Farmers' wives especially welcome the innovation which saves them the trouble of going to and from the railroad station and is an economy of both time and money.

Working on Interstate Postal Road—The Interstate Postal Highway Association, of which H. R. Hilburn, of Shamrock, Tex., is secretary, is making good progress towards the construction of a motor highway that is to run between El Paso and Oklahoma City, a distance of about 700 miles. When completed the road will become a part of a transcontinental highway connecting with the Ozark trail at Oklahoma City, and with the Borderland route leading westward from El Paso. Several sections of the highway are already finished and it is planned to have the whole work completed within the next few months. E. F. Cornels, of Sayre, Okla., is president of the association; J. W. Corn, of Tucumcari, N. M., is vice-president, and P. H. Landigan, of Vega, Tex., treasurer.

Licenses Net Indiana \$379,724—Lew G. Ellingham, secretary of state, has made public a report showing that Indiana, during the 6 months ending June 30, received \$379,724 from motor and chauffeur's licenses. This exceeds the sum received during 1913. After the expense of maintaining the motor licensing department, estimated at 9 per cent of the gross proceeds, is deducted, the remainder will be distributed among the counties of the state. This will be divided in three parts, one-third to be distributed equally, one-third according to the miles of improved highways each county has and the remaining one-third according to the license revenue produced by each county.



Among the Makers and Dealers



BUYS R. C. H. Buildings—The power plant and several other buildings, parts of the general plant of the bankrupt R. C. H. Corp., have been purchased by the General Ice Delivery Co., Detroit.

Invents Motor Car Lock—R. E. Braden has invented a motor car lock that fastens in the steering gear on the combination plan. There are more than 200 combinations. When the device is in operation, a sign is shown reading "Locked."

Lee Tire Dividend Declared—The Lee Tire and Rubber Co., of Conshohocken, Pa., has declared a quarterly dividend of 1½ per cent, payable July 10, to stockholders of record June 30, 1914.

Guides for Reo Plant Visitors—Owing to the ever-increasing number of demands received by the Reo Motor Car Co. from people desiring to visit its plant, several guides have been engaged who will conduct visitors through the plant at regular hours.

Chandler Declares 5 Per Cent Dividend—Directors of the Chandler Motor Car Co. recently declared a dividend of 5 per cent on the common stock. This company also has paid full dividends on its \$200,000 7 per cent preferred. It has \$225,000 common stock outstanding.

Parts Company Is Bankrupt—The Park Motor and Mfg. Co., Cleveland, O., maker of motor car parts, has gone into bankruptcy by the petition of P. J. Brown, vice-president. Assets of \$4,540 are noted against liabilities of \$10,682. More than \$4,000 of the assets is represented in machinery and equipment.

Forge Companies Combine—The Frost Gear and Forge Co., Jackson, has increased its capital stock to \$300,000, nearly all of which is paid in. Arrangements have been made to take over the affairs of the Baker Drop Forge Co., Jackson, and the two concerns thus merged will be known as the Frost Gear and Forge Co.

Dodge Appoints Four New Managers—Four additional district managers have been appointed by Dodge Bros., Detroit. They are C. W. Matheson, with headquarters in New York and jurisdiction over eastern New York state, northern New Jersey, eastern Pennsylvania and all of Connecticut; F. L. Jones, Philadelphia; A. C. Templeton, Minneapolis and surrounding territory; C. S. Hurst, Omaha and surrounding territory.

Electric Tool Company Formed—The International Electric Tool Co. has been organized in Milwaukee, Wis., by a number of well known men in the electrical and engineering field to engage in the manufacture of a line of electrical tools for garages, machine shops, foundries, etc. The officers are: President, William R. Sorgel; vice-president and secretary, William H. Gaulke; treasurer, E. K. Rundle. Factory space has been leased and equipment is now being installed.

Marketing New Carbon Remover—A new liquid oxygen carbon remover called "O-Lax" is being marketed by the Wilkes & Grant Co. of Louisville. A. C. Grant, a chemist who is connected with the concern, is the discoverer of the process. To remove the carbon the motor is run until hot, then it is necessary to take out spark plugs of the two cylinders, turn engine over until the valves are closed and see that the valves are seated. Two to three ounces of the liquid are put in the cylinders and the spark plug should be replaced immediately after treating, as the liquid changes into an oxygen gas when it

touches the hot cylinders. After fixing the two closed cylinders and replacing the spark plugs the motor is started and the carbon blown out through the exhaust by speeding up and slowing down the engine and opening the exhaust at the same time.

Mooney to Direct Hupp Sales—Frank J. Mooney, advertising director of the Hupp Motor Car Co., Detroit, who had temporary charge of the spring selling campaign, has been appointed to the permanent position of sales manager of the Hupp company, in addition to being in charge of the advertising department.

Federal Tire Plant Expansion—Officials of the Federal Rubber Mfg. Co. of Milwaukee celebrated the third anniversary of the company's existence on July 1, by issuing orders for the erection of new factory buildings to cost over \$500,000. Work already is under way on new structures which will be in the form of added units to the present plant. When completed the new buildings will mean an increase of 150,000 square feet of floor space, making 450,000 square feet in the entire factory. Superintendent Hutchens estimates that over 1,000,000 has been expended in new machinery and buildings in the past 3

years. Of the 8 acres owned by the Federal company, 6½ acres are covered with buildings, and a big portion of the remainder will be placed under roof by the end of next season.

Making Light Truck in Cleveland—The Bingham Mfg. Co., Cleveland, O., has taken over the plant and adjoining property of the Electric Locomotive and Engineering Co. at Lorain avenue and Lake Shore railroad and will go into motor car manufacturing. Plans now outlined call for the manufacture of a light delivery truck to sell at about \$800. Officials claim it will be the cheapest truck for its capacity made in the country. The car will have a 25-horsepower motor, 114-inch wheelbase and its bed will be 42 by 78 by 52½ inches. It is expected to turn out about thirty cars a month at first and to increase to 100 cars a month later. The capacity is estimated at 500 cars a month. The Bingham company was organized about 3½ years ago and started a plant at 227 Prospect avenue to make carbureters and spark plugs. Officers of the company are: President, Charles N. Hiles; vice-president, J. Mosel; treasurer, Thomas E. Henry; secretary and manager, Herbert Bingham. F. B. Squire and John A. Kling

Recent Incorporations

Augusta, Me.—Macnish Electric Co., capital stock, \$500,000; to manufacture ignition systems; incorporators, E. M. Leavitt.

Brookton, Mass.—Sterling Motor Co., capital stock, \$500,000; to deal in motor cars; incorporators, G. A. Lewis, J. S. Dedham, D. F. Tilley.

Brooklyn, N. Y.—Rutledge Garage, capital stock, \$10,000; incorporators, B. V. Foulke, J. E. Foulke, Jr., O. N. Sarvant.

Cambridge, Mass.—Porter Station Garage, capital stock, \$15,000; incorporators, W. J. Beggs, C. G. Pimer, G. A. Jule.

Chicago—Motor Car Sales Co., capital stock, \$50,000; to deal in motor cars; incorporators, E. O. Best, L. E. Bowen, R. M. Cornell.

Chicago—Davis Automobile Accessories Co., capital stock, \$25,000; to manufacture and deal in motor car supplies; incorporators, E. M. Oehlert, A. S. Kedzie, H. Garrett.

Chicago—Hallman Motor Livery Co., capital stock, \$1,000.

Cleveland, O.—Kelley Sales Co., capital stock, \$10,000; to deal in motor cars and parts; incorporators, E. R. Cross, L. W. Kelley, F. E. Beaumont, D. V. Fisher, H. C. Luff.

Cleveland, O.—General Rubber Goods Co., capital stock, \$50,000; to deal in rubber goods; incorporators, G. Wilson, L. H. Wallace, W. L. Hassenmueller, W. H. Stuber, G. C. Sheidler.

Cleveland, O.—Trenton Motor Sales Co., capital stock, \$5,000; to deal in motor cars and supplies; incorporators, W. K. Stanley, J. R. Jewett, P. C. Stoller, S. Horwitz, I. A. Skinner.

Columbus, O.—Atlas Tire & Rubber Co., capital stock, \$5,000; to deal in tires; incorporators, J. M. Bernstein, E. E. Gross, N. J. Bekor, F. Allen, J. M. Ulmer.

Columbus, O.—Justus & Parker Co., capital stock, \$15,000; to deal in motor car supplies and accessories; incorporators, E. E. Parker, C. E. Justus, H. M. Parker, B. Smith, J. A. Justus.

Covington, Ky.—United States Motor Truck Co., capital stock, \$250,000; incorporators, R. C. Stewart, B. Bramlage, M. H. McLean.

Detroit, Mich.—Saford Radiator Co., capital stock, \$2,000; incorporators, J. A. Irwin, M. T. Millard, C. E. Stafford.

Detroit, Mich.—States Cycle Car Co., capital stock, \$150,000; to manufacture cycle car; incorporators, M. Charles, V. Valade, S. E. Jones, G. W. Meredith.

Detroit, Mich.—Denby Motor Truck Co., incorporators, G. Denby, J. W. Drake, A. Webster, R. B. Spencer, R. P. Moore, L. C. Freeman.

Detroit, Mich.—Steere Engineering Co., capital stock, \$50,000; incorporators, W. S. Blauvelt, C. Lang, A. H. Green, F. W. Steere.

Detroit, Mich.—Simplex Engine Co., capital stock, \$40,000; incorporators, H. Fraser, Wm. G. Taylor, F. Smallbridge.

Detroit, Mich.—Aetna Motor Truck Sales Co., capital stock, \$5,000; incorporators, F. M. Foster, E. Kinney, J. G. Wagner, W. A. Eldred.

Dover, Del.—Lassco Auto Signal Lamp Co., capital stock, \$100,000; to manufacture lamps; incorporators, D. J. Shern, L. M. Abeles, J. G. Gray.

Dover, Del.—Motor Car Automatic Lock Co., capital stock, \$200,000; to manufacture door locks; incorporators, W. M. Pyle, G. G. Stiegler, M. E. Grubb.

East Orange, N. J.—Riess Starter Co., capital stock, \$200,000; incorporators, C. E. Riess.

Evansville, Ind.—Rimolox Tire Carrier Co., capital stock, \$20,000; to manufacture tire carrier holders; incorporators, M. A. Strouse, W. N. Erskine, A. Harmishfeger.

Gallon, O.—Gallon, Mt. Gilead & Cardington Motor Transit Co., capital stock, \$20,000; to operate motor bus line; incorporators, G. C. Hornatin, F. B. McMillin, C. B. Marsh, D. J. Donavin, C. J. Cugler, E. H. Conaway and M. L. Phillips.

Kittery, Me.—Mower-Campbell-Hollister Mfg. Co., capital stock, \$2,000,000; to manufacture and deal in motor car parts; incorporators, H. W. Foster, G. E. Burnham.

Louisville, Ky.—Electric Garage Co., capital stock, \$25,000; incorporators, G. Bader, F. S. Ouerbacker, J. W. Button.

Nashville, Tenn.—Seaton Pneumatic & Cushion Tire Co., capital stock, \$25,000; incorporators, R. B. Lees and others.

Newark, N. J.—New York Noble Air Pump Co., capital stock, \$100,000; general motor car business; incorporators, E. F. Hermann, E. A. Hermann, J. H. Hermann.

New York—Vehicle-Safeguard Instrument Co., safety devices for motor cars; capital stock, \$25,000; incorporators, J. A. Howe, F. G. Howe, J. J. Howe.

New York—New York Central Transportation Co., capital stock, \$45,000; incorporators, J. S. Sherman, L. M. Mestanz, J. Mover.

New York—Remington Motor Sales Corp., capital stock, \$150,000; incorporators, P. E. Remington, C. W. Bliss, E. M. Kolstad.

New York—Universal Advertising Autocar Co., capital stock, \$25,000; incorporators, A. DeGiorgio, G. J. Lusardi, G. Manara.

Owego, N. Y.—B. Z. T. Car Co., capital stock, \$25,000; incorporators, F. M. Baker, F. D. Baker, C. K. Bell.

Rochester, N. Y.—Pritchard-Lyon Motors Corp., capital stock, \$25,000; to manufacture motor cars; incorporators, C. B. Lyon, P. Pritchard, A. R. Pritchard.

Troy, O.—Automobile Fire Association, incorporators, J. C. Fullerton, Jr., G. W. Conrad, A. C. McClung, S. B. Ferguson, J. H. Fulkerson, G. V. Schnell, W. B. Thompson, A. O. Nichol, J. S. Shinn, T. G. McKnight, H. Gabriel, F. C. Shroyer.

Wilkes-Barre, Pa.—Auto Supplies Sales Co., capital stock, \$25,000; to manufacture motor cars and supplies; incorporators, J. W. Williams, W. H. Turrell, M. E. Dean.

Wilmington, Del.—Motor Car Automatic Lock Co., capital stock, \$200,000.

Wilmington, Del.—Indestructible Tire Co., capital stock, \$1,000,000; tire business; incorporators, J. McLarin, F. B. Knowlton, S. V. Dowling.

Wilmington, Del.—International Motor Wheel Co., capital stock, \$1,000,000.

Youngstown, O.—Auto Gas Service Co., capital stock, \$10,000; to manufacture motor car supplies; incorporators, J. P. McCombs, S. A. Daniels, W. R. Ludt, M. J. Daniels, A. K. Len.

are the only other stockholders. Capital was increased about a year ago from \$25,000 to \$50,000.

New Manager for Scripps-Booth—R. H. Spear, formerly a specialist in factory organization, management and executive administration and editor of the Commercial World Encyclopedia of Accounting, has been appointed general manager of the Scripps-Booth Co., Detroit, maker of the Scripps-Booth cyclecars.

To Make New Ford Rim—A new type of demountable rim for Ford and other cars will be manufactured in large quantities by the Simplex Demountable Rim Co., which has just been incorporated in Milwaukee by M. Rosenhemier, W. J. Sarres and M. H. Rosenheimer, who have been conducting a small shop in this line for several months. The new corporation has a capital stock of \$150,000. Ford rims will be given special attention and a large output of 30-inch wheel rims is about to be started. The device was designed by Dr. Meyer Rosenheimer, 841 Island avenue, Milwaukee.

Attaches Warranty to Car—The plan of pasting a copy of the N. A. C. C. standard warranty on the board which holds one of the front seat cushions, so that the warranty becomes a part of the car, has been adopted by one of the members of the National Automobile Chamber of Commerce to insure that the purchaser will receive a copy of the warranty and have plenty of opportunity to become familiar with its terms. It has been the experience of the company that dealers do not always notify the factory of the name and addresses of new owners, so that sometimes it is impossible to place a copy of the guarantee in their hands.

New Jeffery Sales System—A new plan of organization now being followed by the Jeffery company, was announced by Sales Manager E. S. Jordan at a conference of Jeffery salesmen held at Kenosha last week. The country has been divided into twenty-three districts, each in charge of a district representative working under the general direction of the factory sales department. It will be the duty of the Jeffery district representative to appoint dealers, determine the extent of territories and exercise general supervision over the business of the Jeffery company in the districts assigned. The appointments made with the territories designated and the headquarters of the various men are as follows: C. G. Anderson, northern Illinois, with headquarters in Peoria, Ill.; G. N. Bliss, Kansas and Nebraska, Kansas City, Mo.; John Carlberg, Oklahoma and Arkansas, Oklahoma City, Okla.; J. E. Corby, Indiana, Indianapolis, Ind.; A. E. Creeger, western Ohio, Tiffin, Ohio; C. S. Culp, New York, Rochester, N. Y.; W. H. Daley, southern Illinois, Kenosha, Wis.; L. H. Glenn, western Iowa, Omaha, Neb.; H. C. Hart, eastern Iowa, Des Moines, Ia.; T. W. Johnston, North and South Carolina, Columbia, S. C.; E. W. Milburn, California and Nevada, San Francisco, Cal.; R. R. Minton, Colorado, Utah and Wyoming, Denver, Colo.; G. B. Muma, Montana and Canada, Winnipeg, Man., Can.; R. L. Newton, Virginia, eastern West Virginia, District of Columbia, Richmond, Va.; L. E. Rood, Wisconsin, Kenosha, Wis.; John A. Rose, Florida and Georgia, Jacksonville, Fla.; H. D. Snyder, Michigan, Grand Rapids, Mich.; B. F. Spencer, eastern Ohio, western West Virginia, western New York, Warren, Ohio; C. R. Spencer, Alabama, Mississippi and Tennessee, Memphis, Tenn.; H. A. White, Texas and Louisiana, New Orleans, La.; W. Ross Eaton, Arizona and New Mexico, Phoenix, Ariz.; H. A. Burgess, Idaho, Washington and Oregon, Portland, Ore. Two important additions to the dealers' organization of the Jeffery company were made during the past week when announcement was made of the appointment of the Frank C. Riggs Co. of Portland, Ore., as distributor

for that state, and McArthur Bros. of Phoenix, Ariz., was named as distributor for Arizona.

Bingham Starts Truck Production—The Bingham Mfg. Co., recently chartered, started about July 1 to make trucks at the former plant of the Electric Locomotive and Engineering Co., on Lorain avenue, Cleveland.

G. M. C. Files Rate Complaint—The General Motors Co. has filed a complaint with the interstate commerce commission on the freight rates on iron to Flint, Mich., claiming that the rates to Detroit are preferential rates.

John Primrose Passes Away—John Primrose, well known in motor car manufacturing centers and formerly factory manager of the Marion Motor Car Co., Indianapolis, Ind., died at Flint, Mich., recently, from the result of overwork and a general breakdown.

Holton Sales Manager of Monarch—Hoover Holton, formerly general sales manager of the Empire Automobile Co. and of the American Motors Co., Indianapolis, has been appointed general sales manager of the Monarch Motor Car Co., Detroit.

Moore Made General Manager—E. A. Moore, production manager of the Fairbanks-Morse Mfg. Co., Beloit, Wis., has been appointed general manager of the gas engine department to succeed F. E. Greene, who resigned recently. Mr. Moore is an internal combustion engineer and has been associated with the Fairbanks-Morse and other engine builders for many years.

Havers Recovering from Fire—A telegram from the Havers Motor Car Co., of Port Huron, Mich., manufacturer of the Havers sixes, states that while its plant was partially destroyed by fire on the night of July 7, it will not interrupt shipments of cars more than 3 or 4 weeks and that all orders for parts will be filled immediately upon receipt and business carried on in the usual way.

Motor Car Plant for New Orleans—A million-dollar company to manufacture motor cars in New Orleans has been launched by local promoters. Runabouts, touring cars, limousines and trucks will be built by the concern. Work on the factory will be started, it is announced, as soon as 20 per cent of the stock has been sold. At a stockholders' meeting the following officers were elected: President, J. B. Davis; vice-president, A. C. Vreeland, and secretary, John Merkl, Jr.

Midgley to Purchase Factory—The deal for the purchase of a tract of land on South Market street, Lancaster O., which contains the old plant of the Ohio Flint Glass Co., will soon be closed by the Midgley Tire and Rubber Co., of which Harry Davis of Pittsburgh is president. The cost of the tract and plant will be \$25,000. The work of remodeling the old factory into a modern tire plant will be started at once.

Sells Patent Rights to Signal—Charles Johnson, a chauffeur of Columbus, O., who is the inventor of the electrical automatic device for signalling to traffic policemen, has sold the patent rights to the Peerless and Pierce-Arrow companies for \$5,000. The letter S flashes out when the course is straight ahead, the letter R when a turn to the right is desired and the letter L when turning to the left.

Tractor Factory Almost Completed—The Auto Tractor Co.'s new plant in Niles, Mich., is nearing completion. It is a one-story structure, 100 by 115 feet, with a monitor in the center having a clear span of 33 feet. The roof is supported by a traveling crane to serve the center bay of the building. The factory is located on the South Bend division of the M. C. R. R. Machinery will be installed within the next 10 days. The officers of the company are W. H. Zimmerman, president; F. J. Plym, vice-president, and F. S. Hadfield, secretary-treasurer. The

company makes a specialty of manufacturing farm tractors for attaching to all standard makes and sizes of motor cars.

Starter Company Dissolves—The Faultless Starter Co., organized at Racine, Wis., several months ago to build engine-cranking devices, has filed notice of dissolution as a corporation. The officers state that the action is due to their inability to obtain sufficient financial support.

Princess Cyclecar Co. Dissolves—The Princess Cyclecar Co., Detroit, has filed notice of dissolution and the Princess Motor Car Co., recently incorporated, with a capital stock of \$100,000, is its successor. This concern makes the Princess light car.

Alter Moves to Plymouth, Mich.—The Alter Motor Car Co., formerly at 1146 Grand River avenue, Chicago, has moved into its new plant in Plymouth, Mich., a two-story factory, 50 by 200 feet. The concern, which is a new one, recently shipped its first ten cars and has several hundred cars booked to be delivered within the next few months.

Detroit Section of E. V. A. Formed—For the purpose of further promoting the popularity of electric vehicles, both for pleasure and for commercial usage, a Detroit section of the Electric Vehicle Association of America has been formed, of which J. W. Brennan, purchasing agent of the Edison Illuminating Co., Detroit, is temporary chairman, election of officers not having taken place yet.

Driggs-Seabury Gets U. S. Order—The Driggs-Seabury Ordnance Corp., Sharon, Pa., maker of the Vulcan truck, has entered into contract with the U. S. government to supply 2 and 3-ton trucks during the fiscal year, starting July 1. The estimated number of trucks to be required is between 100 and 120. The machines will be used in the quartermaster's department of the army.

Building Additions to Spring Plant—The Simmons Mfg. Co., Kenosha, Wis., a large producer of spring sets for motor car cushions and upholstery, and the largest manufacturer of metal beds and parts in the world, has broken ground for three additions to cost \$100,000 and be completed by August 15. The buildings consist of a machine shop, pattern shop and drafting room, 60 by 260 feet; a gray iron, brass and bronze foundry and blacksmith shop, 60 by 200 feet, and a pattern storage house, 40 by 125. The additions are for a large part made necessary by the large volume of business in springs for motor car body builders.

Kissel Truck Drivers Organize—Fostered by Frank J. Edwards, president of the Kissel-Kar Co. of Milwaukee, a permanent organization of all Kissel-Kar truck drivers in the city and county of Milwaukee was organized at the first annual outing held last Sunday near Milwaukee. Seventy-five drivers and their families attended and after the dinner held a business meeting and perfected an association for mutual benefit and interest. Mr. Edwards believed the interests of employers will be greatly enhanced by the organization, and he has arranged for lectures by factory experts on the Kissel-Kar truck before the monthly meetings of the new association.

Dunlap Electric Truck Tested—The Dunlap Electric Truck Co. of Columbus, which was organized recently with a capital of \$20,000, has completed its first model, which has been inspected by representatives of the General Electric Co. The company occupies the plant of the Dunlap Engineering Co. on Parsons avenue. The truck is chain driven and carries a load of 750 pounds. In the tests the truck was loaded with 1350 pounds. It develops a speed of 12½ miles ordinarily, with 15 miles emergency speed. The axles are tubular and the wheels are the F. & H. wire wheels. The incorporators of the company are T. C. Dunlap, George R. Hedhes, Stewart A. Hoover, Herman R. Tingley and M. E. Heasley.



Brief Business Announcements



EMPIRE, Mich.—Steve Maddaugh and Alfred Verne are building a garage here and will secure the agency for a light, medium price car.

Detroit, Mich.—The Dodge Motor Car Co., which was recently organized in Detroit and is making the Dodge light car, has opened a salesroom at 1193 Woodward avenue.

Boston, Mass.—H. Winthrop Chandler has taken the rights for the Stahle mechanical tire for the New England states and has opened temporary headquarters at 110 State street.

Louisville, Ky.—R. M. Cunningham, who has headquarters in the Inter-Southern building, will manufacture steel portable garages in this city. These garages will be made in sizes to suit the purchaser.

Boston, Mass.—Wade H. Jones, formerly identified with the Standard Tire and Rubber Co., of Boston, Mass., has resigned to go into business for himself. He has opened an accessory store in the Motor Mart in Boston.

Milwaukee, Wis.—W. Schlueter, Milwaukee, formerly instructor in the Northwestern Motor Institute and more recently mechanical engineer for the Creek Motor Car Co., Milwaukee, has opened a garage and repair shop at 319 Farwell avenue, Milwaukee.

Newport, R. I.—Dutee Wilcox Flint, who sells Ford cars in Providence, Pawtucket and Woonsocket in Rhode Island, and in New Haven, Bridgeport and Waterbury in Connecticut, has opened his seventh salesroom on Bellevue avenue, Newport, R. I.

Des Moines, Ia.—F. A. Greene succeeds Frank Weldon as manager of the Cole Motor Co. in Des Moines. The local agency also has been made the factory branch. Mr. Greene, who comes from Chicago, has been with the Cole company ever since its incep-

tion. Mr. Weldon continues his connection with the company and probably will accept another agency in the state.

Grand Rapids, Mich.—Frank Scheimerhorn will open a two-story garage on Division avenue, near Pleasant street, Grand Rapids, soon.

Los Angeles, Cal.—E. V. and Lionel Armstrong have taken charge of the new home of the Chandler Motor Car Co. in Los Angeles. D. P. Smith has been named sales manager.

Hinsdale, N. H.—Forest S. Lowell has purchased the old Leach Carriage Co.'s factory at the junction of the two main streets in Hinsdale, N. H., and remodeled it into a garage.

Indianapolis, Ind.—A garage and repair shop have been opened at 2121 East Washington street by C. A. George and Arthur Sears. They occupy a fireproof building which was erected for them.

Detroit, Mich.—The Hudson Motor Car Co., Detroit, has appointed Ernst H. Brandt as its general eastern representative, with headquarters in New York, while Frank Smith has been appointed representative for Minnesota, with headquarters in Minneapolis.

Nashua, N. H.—Alderman Charles Williams and Napoleon F. Paquette, of Nashua, N. H., have purchased the City Garage in that city and renamed it the Indian Head. They have formed a stock company to finance it with Mr. Williams as president and Mr. Paquette as secretary and treasurer.

Milwaukee, Wis.—Dr. Norman R. New, sales manager of the Milwaukee branch of the Mitchell Automobile Co., Chicago, resigned July 1 to resume his association with the home office and headquarters in Chicago, after a 2-year stay in Milwaukee. H. W.

Bonnell, local manager, assumes the position of sales manager in addition to his other duties.

Columbus, O.—Ray Thomas has completed a fireproof garage, located at 1176 East Main street, which will be known as the Cut Rate Garage.

Worcester, Mass.—The Bosch Magneto Co. has signed a lease for a store on Main street, Worcester, Mass., where it will establish its own distributing station for central Massachusetts.

Leominster, Mass.—W. A. McAuley and Gustave Malley, formerly with the Leominster Garage and Auto Co., at Leominster, Mass., have formed a company and opened a new garage and repair shop at 112 Union street here.

Great Barrington, Mass.—John T. Harper, a well known druggist of Great Barrington, Mass., has formed a company to operate the Easland Garage at the corner of Maine and Bridge streets, that was closed some time ago. He is the president and treasurer of the new company.

Louisville, Ky.—The Haynes Auto Co., of Kokomo, Ind., has established an office in this city at Fourth and York streets. Dave Williams, formerly connected with the advertising department of the American concern at Indianapolis, is the representative of the factory in charge here.

Worcester, Mass.—P. Walter Fay, of the Warren Garage Co., of Worcester, Mass., has formed a company to start the manufacture of the new spring for motor vehicles for which he received a patent a short time ago. Daniel T. Higgins and John J. Barry have joined the company and the springs will be turned out in a shop on Vine street for the present.

Recent Agencies Appointed by Motor Car Manufacturers

PASSENGER CARS

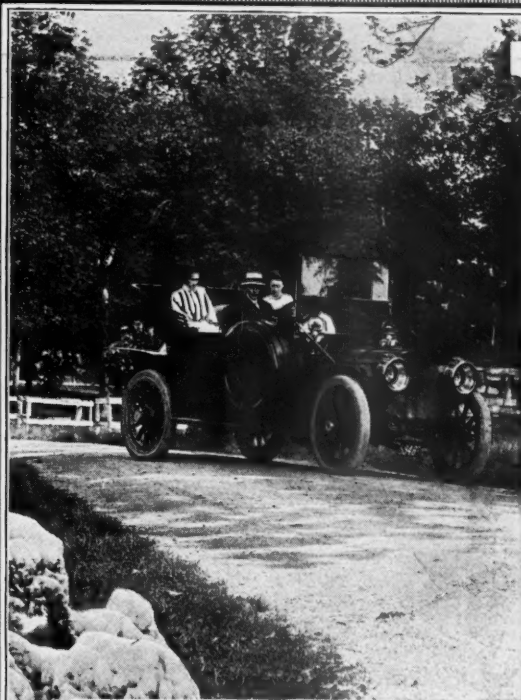
Town	Agent	Make
Anaconda, Mont.	F. M. Osbourne	Hercules
Ashland, Ky.	Marting's Garage	Ford
Ashland, Ky.	Wellman Motor Car Co.	Overland
Ashland, Ky.	Wright Motor Car Co.	Saxon
Aulne, Kan.	Aulne Auto Co.	Maxwell
Beaver Dam, Ky.	M. D. Hudson Automobile Co.	Saxon
Bowling Green, Ind.	K. X. Frump	Maxwell
Burton, Tex.	Charles Kasten	Maxwell
Carrollton, Ky.	J. G. Howe	Saxon
Campbellsville, Ky.	Buchanan-Lyon Co.	Ford
Centerville, Ind.	J. M. Zea	Maxwell
Central City, Ky.	Barnes Automobile Co.	Ford
Cerro Gordo, Ill.	C. W. Adams & Co.	Maxwell
Circleville, O.	G. L. Schiear	Allen
Circleville, O.	G. L. Schiear	Hupmobile
Circleville, O.	G. L. Schiear	Cadillac
Cynthiana, Ky.	Bryant McMurtry	Saxon
Danbury, Neb.	J. W. Nutt	Maxwell
Evansville, Ind.	E. H. Rasch & Co.	Allen
Florence, Ala.	McRae Motor Car Co.	Maxwell
Frankfort, Ky.	Nicols Brothers	Saxon
Glendive, Mont.	W. B. Smalling	Hercules
Halley, Ida.	Hailey Garage Co.	Maxwell
Harrodsburg, Ky.	Ingram's Garage	Saxon
Havre, Mont.	Havre Auto Co.	Hercules
Hawesville, Ky.	T. D. Hale	Ford
Helena, Mont.	C. H. Fortman	Hercules
Heppner, Ore.	N. E. Winnard	Maxwell

Town	Agent	Make
Henderson, Ky.	J. V. Gasser	Saxon
Hitchins, Ky.	Clayton S. Hitchins	Saxon
Indianapolis, Ind.	Harry L. Archey	Locomobile
Leitchfield, Ky.	Paul Meridith	Saxon
Lexington, Ky.	Phoenix Motor Car Co.	Reo
Lexington, Ky.	A. W. T. Davis	Briscoe
Lexington, Ky.	McFarland Six Sales Co.	McFarland
Lexington, Ky.	Bluegrass Auto Co.	Paige
Lexington, Ky.	S. E. Drake	Overland
Louisville, Ky.	Louisville Automobile Exch.	Partin-Palmer
Louisville, Ky.	J. A. Viglini	Vulcan
Miles City, Mont.	Myers & Lindeberg	Hercules
Minneapolis, Minn.	John P. Snyder Automobile Co.	Paterson
Nashville, Tenn.	Stutz Motor Car Co.	Stutz
Nashville, Ten.	Dixie Motor Car Co.	Saxon
Nashville, Ky.	Stutz Motor Car Co.	Stutz
New Albany, Ind.	W. W. Humbert	Saxon
Newport, R. I.	D. W. Flint	Ford
Owensboro, Ky.	J. R. Beck	Saxon
Paducah, Ky.	C. N. Baker	Saxon
Poole, Ky.	Crowley & Nelson	Saxon
Portland, Ore.	Francis & Kadderly	Briscoe
Russellville, Ala.	Charles R. Wilson	Maxwell
Shoshone, Ida.	Helman & Helman	Maxwell
Sioux City, Ia.	Overland Sioux City Co.	Overland
South Bend, Wash.	Soule & Round	Maxwell
Three Forks, Mont.	E. C. Waddell	Hercules

COMMERCIAL CARS

Athens, O.	F. E. Goldsberry	Koehler
Bangor, Me.	S. L. Crosby	Koehler
Hightstown, N. J.	Thomas Peppler & Son	Koehler

West Newton, O.	McKernery & Britton	Koehler
Whitehouse, N. J.	Burdette Brothers	Koehler
Youngstown, O.	Regal Sales Co.	Koehler



5,918,098
Gallons Sold in 1913
1,536,232
Gallons More Than 1912

Every make and type of motorcar, motortruck, motorcycle and motor boat is represented in the enormous list of POLARINE users.

Thus it is proved that perfect lubrication and protection against wear is assured in POLARINE, no matter what make or type you own.

POLARINE maintains the correct lubricating body at any motor speed or temperature, and remains liquid at zero.

Polarine
FRICTION REDUCING MOTOR OIL

Made and
unhesitatingly
recommended
by the



Standard Oil Company

(AN INDIANA CORPORATION)

Makers of Lubricating Oils for Leading
Engineering and Industrial
Works of the World (227)



Schebler Carburetor



DUESENBERG AT SIOUX CITY



STUTZ AT TACOMA



"BABY SPEED DEMON" AT PEORIA

Wins All National 4th of July Championships

Again proving the **Dependability, Speed**
and **Power** of the **Reliable Schebler.**

The Schebler Carburetor has won over
85 per cent of the official motor car tests
in America.

WHEELER & SCHEBLER

Manufacturers

INDIANAPOLIS

350,000

Motorists use the Klaxon



When Writing to Advertisers, Please Mention Motor Age.

J. S. Bretz celebrated the 4th of July in
Europe because

F & S

BALL BEARINGS

Finished 1-2-3

in the 1914 Grand Prix de France!

Time
1—Mercedes 7.08.18
Lautenschlager (65.55 m. p. h.
for 467.5 miles.)

Time
2—Mercedes 7.09.54
Wagner

Time
3—Mercedes 7.13.15
Salzer

All three mounted exclusively on F & S Ball Bearings, defeating in this, the world's classic road race, the best racing creations of France, England, Italy and Switzerland, over a decidedly winding country circuit of 23.3 miles of 20 laps.

Thus does—History repeat itself again,
In this German Mercedes win;
For a stern chase is a long chase,
When F & S Bearings make the pace.

CHEAPER
THAN
LBA



YOUR MIND IS NOT EASILY CHANGED

when you have had good service from an article, even if the price was slightly higher than the imitation.



THE
LBA
TRADE MARK REGISTERED
BATTERY



Costs you a little more than the imitation
but when you have it

You know you have full value

Write us for Full Information

WILLARD STORAGE BATTERY CO., Cleveland, Ohio

New York Branch: 228-230 W. 58th St.

Chicago Branch: 2241 Michigan Ave.

Detroit Branch: 736-740 Woodward Ave.

San Francisco Branch: 821 Monadnock Bldg.

Indianapolis Branch: 318 North Illinois Ave.

SERVICE STATIONS IN ALL PRINCIPAL CITIES IN THE UNITED STATES, CANADA AND MEXICO

(107)

Herff-Brooks

A 50 Horse Power

The HERFF-BROOKS SIX is the smashing, sensational value for 1915. It beggars compe-

The Car is Good

Striking Selling Features

Price, \$1375
Six cylinders, 4"x4 1/2"
50 horsepower
Seven bearing crankshaft
Highest grade Bosch high tension magneto (D U system)
Electric starting, electric lighting—Apple system
One-man silk mohair top
Honeycomb radiator
Stromberg carburetor
Timken and New Departure bearings
18" Steering Wheel, folding down type for easy exit from car
Detachable, demountable rims, with extra rim
34 x 4 Goodyear No-Rim-Cut tires
Headlight dimmers
Tire irons, foot rest, robe rail, Stewart-Warner speedometer
Auxiliary seat in tonneau, clear vision, ventilating windshield and complete equipment
Linoleum covered running boards
Wheelbase 124"
5 Passenger Touring Car and 2 Passenger Roadster bodies

NO man can read the Herff-Brooks Six specifications and not realize that this car is a superb machine. There never has been a time before now when so complete and splendid a car could be bought for \$1375.

Let this thought go deep. It is, we believe, the most valuable announcement ever made to consumers and dealers.

It means a magnificent car to sell and a jewel to buy.

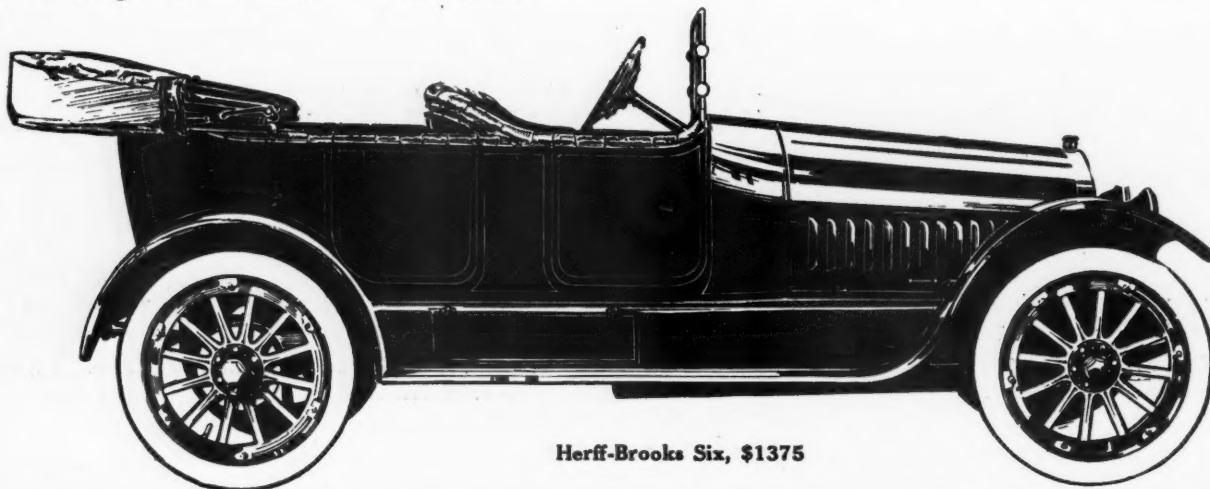
The Herff-Brooks is manufactured as completely as any car built, in one immense factory. This plant has for years been building parts for the leaders of the automobile industry. It

makes everything, from screws to motors. The huge part business still goes on, so that our expenses are tremendously reduced. Our overhead cost is far below our competitors, our organization is much less expensive because it was brought together long ago. We enjoy the unprecedented advantage of producing Herff-Brooks cars in a perfectly equipped, well organized, strikingly efficient plant, whose one business for years has been the quantity production of high-grade automobile parts.

Here is an offer few manufacturers would dare make, but we do it and shall be sincerely glad to have you accept it.

Come to Indianapolis at Our Expense— Now

Our car, and the plant which makes it, are exactly as we say, and we want you to see them. No dealer ever came to see us who did not recognize in our proposition something that he wanted. We will pay the transportation expenses of any dealer who comes to see us and, finding that the facts are as we state them, makes a dealer's agreement with us. Don't hesitate. This is a record-breaking car, good as gold and a wonderful seller in the hands of an active dealer.



Herff-Brooks Six, \$1375

When Writing to Advertisers, Please Mention Motor Age.

Herff-Brooks

Six for \$1375

tition and sells at sight, because men can see that it is good and the price is record-breaking.

The Price is Right

THE price of the Herff-Brooks Six puts a dealer where every man has always wanted to be—away below competition.

People buy on price, all things considered, and when you reflect that the Herff-Brooks surpasses in appearance and performance anything within several hundred dollars of its price, you can understand what a tremendous appeal the price makes.

The price is right, and the discounts are right too. You will make good money on every car you sell.

Think for a minute what the price means.

Is there a single prospect in your territory who may have his mind on a Six at \$1550, \$1650,

\$1750 or higher, who will not listen eagerly if you show him that you can give him more, and at \$1375. No! the price argument is a clincher, and never more than this year.

The Herff-Brooks line, both the \$1375 Six and the \$1100 Four, is a competition-beating line. It offers a wonderful opportunity to the dealer who has seen enough business go to his lower-priced competitors' doors, and who would like to know how it feels to handle a car as good or better than his competitors', at a much lower price.

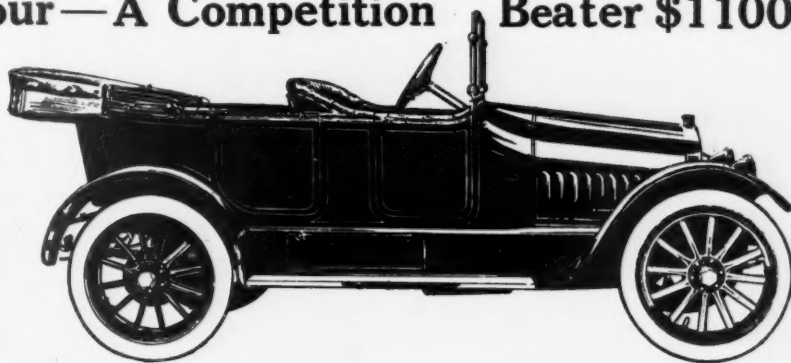
Think it over. This is business. It is also human nature. And the more you ponder on this matter, the more clearly you will see what we have to give you.

The Herff-Brooks Four—A Competition Beater \$1100

Features

Price \$1100
40 Horsepower
4 cylinders, 4½"x5"
Five bearing crank
shaft
Highest Grade Bosch
High tension mag-
neto (DU System)
One-man silk mohair
top
Honeycomb radiator
Apple Electric Start-
ing and lighting
Timken and New De-
parture bearings
Stromberg carburetor
18" Steering wheel,
folding down type
for easy exit from
car

Wheelbase 118"
34 x 4 Goodyear No-
Rim-Cut tires
Detachable, demount-
able rims and extra
rims
Headlight dimmers
Complete equipment.
Tire irons, foot rest,
robe rail, auxiliary
seat in tonneau, con-
cealed tool boxes,
Stewart-Warner
speedometer, etc.,
etc.
5 Passenger Touring
car and 2 passenger
roadster bodies.



Write for Catalog M-A

HERFF-BROOKS CORPORATION

INDIANAPOLIS, IND.

If you are a live dealer, looking for a live line, wire or write immediately, or, better still, come to Indianapolis at once. Our last year's business was a great success and we are opening up now for bigger things.

When Writing to Advertisers, Please Mention Motor Age.

CONNECTICUT

MASTER VIBRATOR

is the pioneer instrument of its kind—designed, developed and manufactured by electrical control specialists for the purpose of providing efficient and reliable ignition for Ford Cars.

IGNITION ON A FORD CAR is simple and will give equally as good results as the ignition on any car provided a Connecticut Master Vibrator is installed to perform a function which the regular equipment is unable to accomplish.

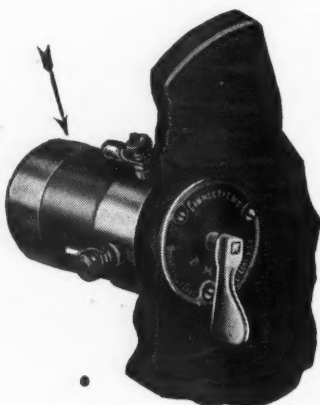
THINK OF IGNITION THIS WAY—get it in your mind as a case of “How,” “When” and “Where.” The Ford fly-wheel magneto produces an electric current—(alternating) which is applied at the Spark Plugs in the shape of sparks. There is the “How” and “Where.”

CONTROLLING “WHEN” THE SPARKS OCCUR is the hardest proposition—hard because the coils on a Ford are not capable of handling alternating current without frequent adjustment. Unless the adjustments be made perfectly each time satisfactory results are impossible, synchronism is disturbed and the

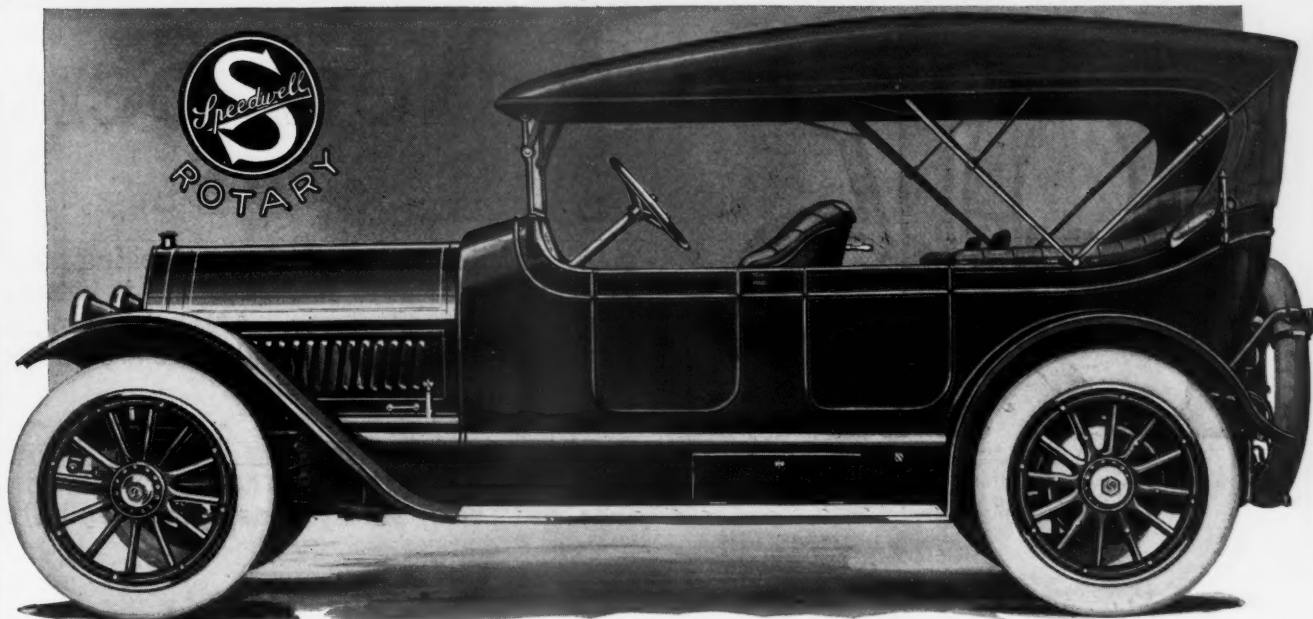
motor loses power, flexibility, and is hard to crank.

THE CONNECTICUT MASTER VIBRATOR, a special type alternating current master vibrator—a single instrument which performs the functions of all four of the regular Ford coils—in an efficient and dependable manner. THE STANDARD FLUSH SWITCH which controls the Connecticut Master Vibrator is all that shows on the Dash—the coil goes on the other side of the Dash under the motor hood. (See illustration.)

AS FOR RESULTS, one Ford owner who lives in Detroit wrote: “The Connecticut Master Vibrator made a marked improvement over the perfectly adjusted coils. The engine runs more smoothly and quietly than before. Starting is far easier and my motor is more flexible.” Price \$9.00. Ask your dealer or write us direct. Full guarantee with each instrument.



CONNECTICUT TEL. & ELEC. CO.
MERIDEN **CONNECTICUT**



The New Speedwell Rotary Six Series "I" Is Ready

Series "I"

SPEEDWELL ROTARY SIXES

Rotary valve six cylinder
motor, $4\frac{1}{8}$ " by $5\frac{1}{4}$ ".

135" Wheelbase.

36"x4 $\frac{1}{2}$ " tires on 4 and 5
passenger models.

37"x5" tires on 6 and 7
passenger models.

One chassis for all models
completely equipped.

4 and 5 Pass. Touring,
\$2850.

6 and 7 Pass. Touring,
\$2950.

IN this new Rotary Valve Motored Speedwell we have **bettered** the past season's Speedwell Rotary Six—a car that was the real automobile achievement of the present motor era.

Among its changes and refinements in design and equipment we mention:

**Westinghouse System of Starting,
Lighting and Ignition**

**New body with wider seats in tonneau
Instrument Board under cowl instead
of on floor board**

Kellogg Power Tire Pump

Golde-Patent One-Man Top

Warner Speedometer Klaxet Horn

Numerous Motor Refinements

Send for advance catalog of this car, and if a dealer, consult us upon agency representation in unoccupied territory.

Address Dept. A, The Speedwell Motor Car Company, Dayton, Ohio

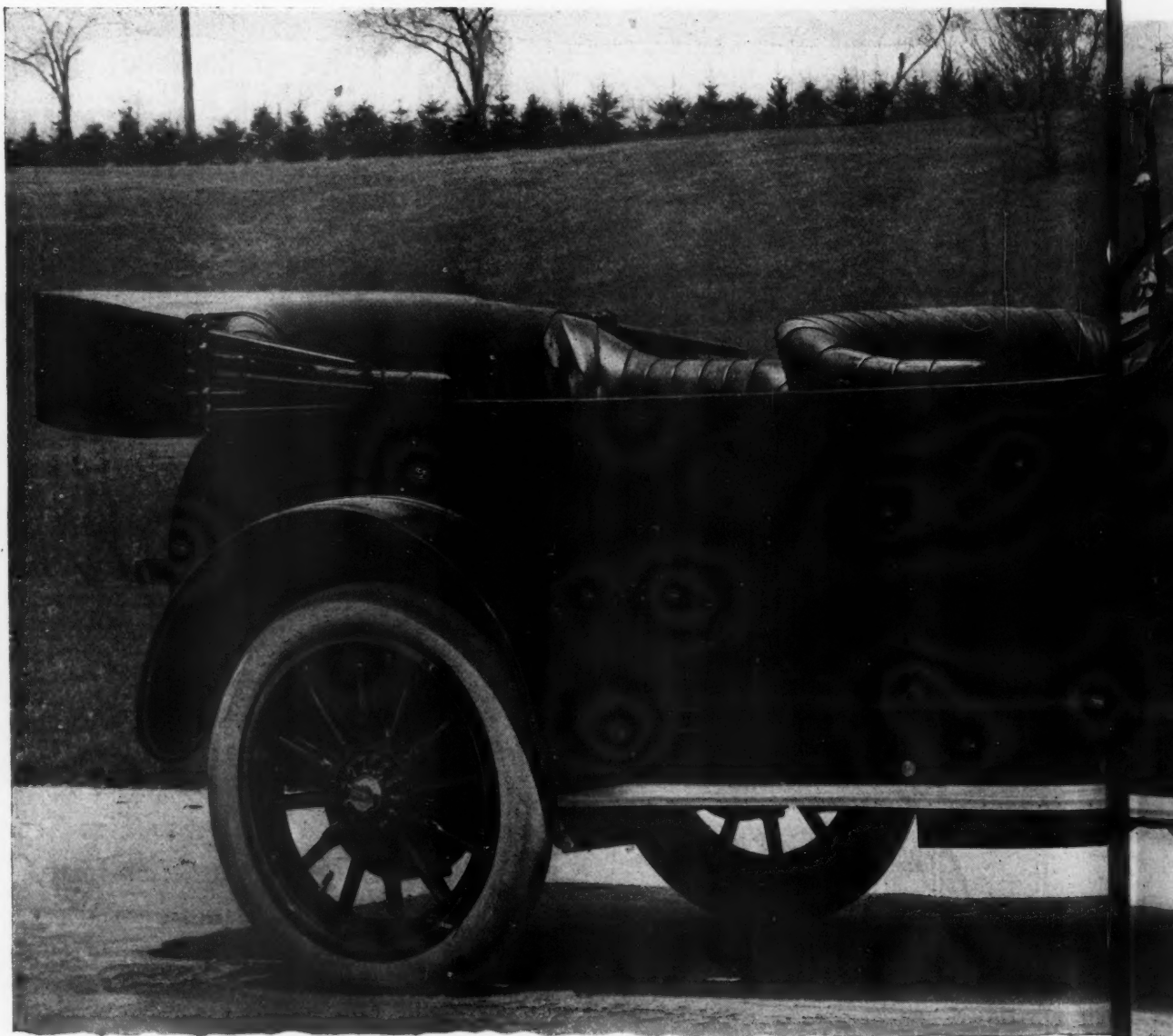
1915

A New Series-A

MR. DEALER:

Have you ever seen a better looking car? No! IT'S A REAL 1915 MODEL and it lists at \$400 less than its predecessor. AND the same quality of specifications remain (and there are no better in any car irrespective of price).

Here is the great big buy of the season. THINK IT OVER. Then act! Attractive appearance and price; sturdy construction and UP-TO-



Premier Motor Manufacturing C

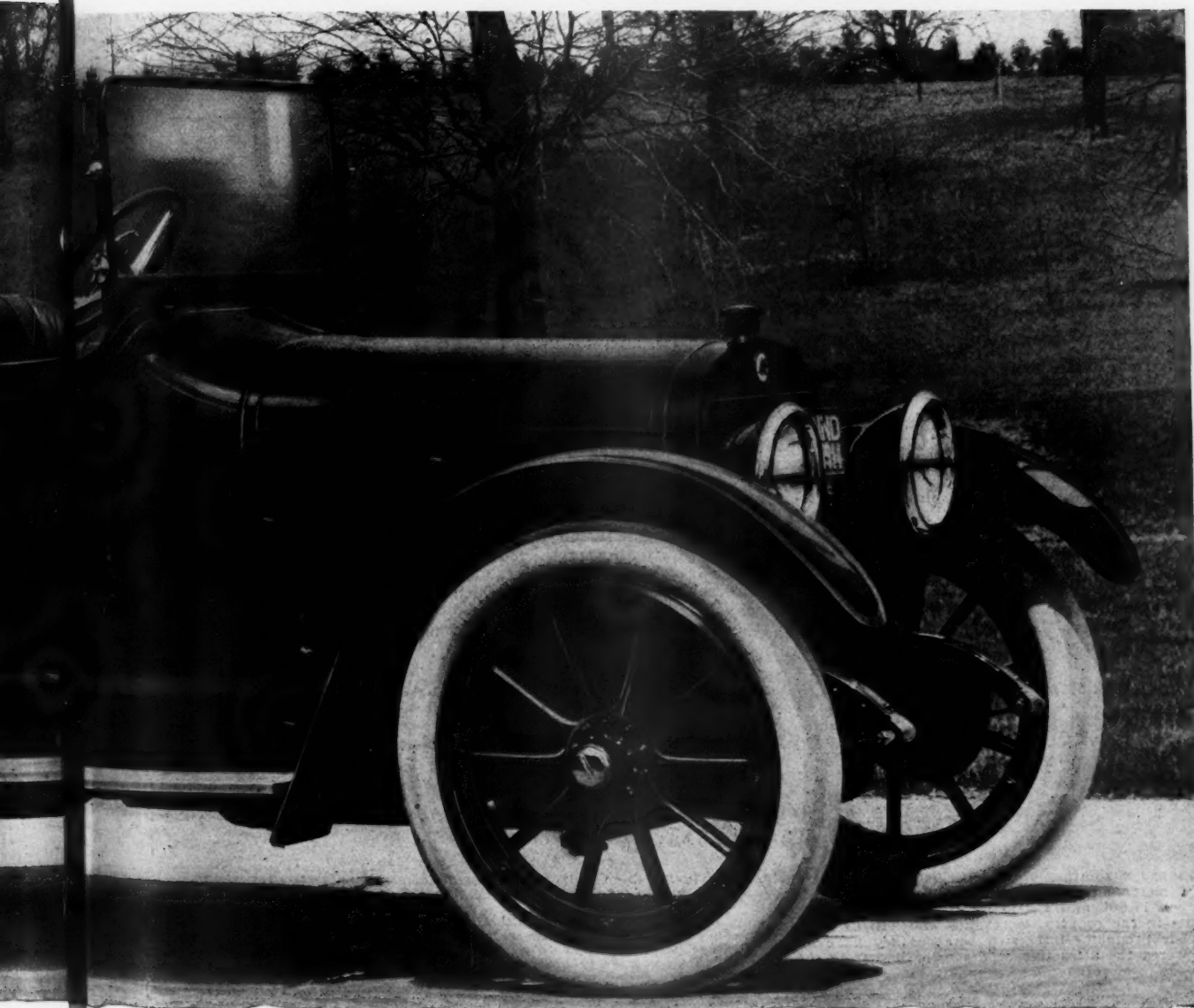
es-A New Price

\$2385

THE-MINUTE design and equipment, backed by PREMIER reputation and prestige, insures the sales advantage—the edge—to do the big early 1915 business with this Premier 6-49.

Let us hear from you or call and see this car and the factory that builds it.

PROMPT DELIVERIES—IMMEDIATE PROFITS



ing Company, Indianapolis



Window Displays of Motor Accessories Make Instant Appeal to Motorists

Hardware dealers realize the selling help of their windows. They know the sales possibilities of auto accessories, and show them up this way.

These displays indicate to the motorist the stores where he can fill his wants, besides affording valuable free publicity for the manufacturers. They attract interested attention of the motorist whether he is passing by in his car or afoot. He goes into these hardware stores because he is confident of courteous treatment by intelligent, clean-cut salesmen and of finding a complete stock of merchandise from which he can make selections with full confidence in the quality of the goods purchased.

Motorists are always looking for such stores and so are motor accessory and supply manufacturers as an outlet for their products. As a

Motor Accessory and Supply Manufacturer

you want to find the quickest and best way to get your products into Hardware Stores of this class.

Hardware Age

offers you a solution of this problem. It is the recognized merchandizing medium of this field; it reaches between 17,000 and 18,000 of well rated hardware merchants in the country, merchants who will be interested in your products—interested because they have already discovered the attractive profits to be had from the sale of goods to motorists and are rapidly extending their lines.

Thousands of dollars of automobile merchandise is being purchased for the hardwareman's newly installed accessories department.

We have assisted several automobile accessory manufacturers to broaden their market by adding the hardware field. We can do as much for you. Get in touch with us now—we know this field from A to Z, and how to interest the hardware dealer.

Hardware Age

239 West 39th Street
New York City

HIGH *and* LOW TENSION MAGNETOS



MASTER VIBRATORS ROAD SMOOTHERS AUTO LOCKS

A Hot Fat Spark Timed Accurately

The world's foremost engineers know this to be the secret of perfect ignition. Over 100,000 users of K-W Master Vibrators know that the large, powerful condenser and generous, solid, platinum iridium contact points found in their K-W Master Vibrators give that kind of a spark. You will get the same reliable and efficient service by demanding the original



MASTER VIBRATOR

ITS USE MEANS

- Perfect Ignition—More Power
- One adjustment instead of four
- A hotter spark—Easier Starting
- A smoother running engine
- Less carbon deposits—Less gasoline used
- Cleaner spark plug—No worry



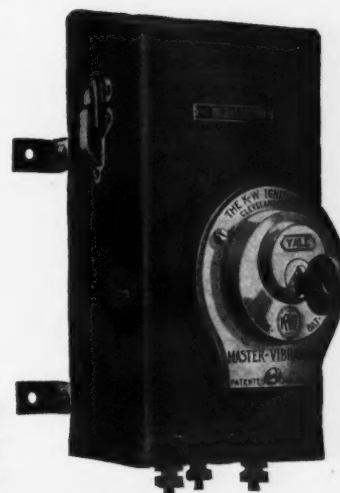
**\$15.00 With Regular
Kick Switch**

The K-W Master Vibrator, while resembling an ordinary vibrator, is really a scientifically constructed magnetic circuit breaker which times the spark more accurately and gives better and surer ignition than a high tension magneto.

Only one adjustment. It takes the place of 4 separate vibrators in your coil, giving you one fast vibrator and a powerful condenser, which insures absolute synchronism.

The K-W Autolock Switch absolutely protects your car from tampering and theft. Your key in your pocket is proof that you will find your car locked right where you left it. Sold separately ready to apply to any Ford coil for \$3.50.

The K-W Master Vibrator is the Standard of Excellence all over the world



**\$16.00 With K-W
Autolock Switch**

In buying your Master Vibrator be sure you get a K-W. Look for the K-W trade-mark and the serial guarantee number. They protect you against imitations. If your dealer can't supply you we will send one direct, postpaid, on receipt of price. Write for "That satisfied feeling Folder."

HEADLIGHTING OUTFITS

2835 CHESTER AVE. **THE K-W IGNITION CO.** CLEVELAND, OHIO, U.S.A.

SPARK COILS SPARK PLUGS

Men of sound judgment, of sober thought and intelligent action are never convinced by false argument

Men of this type are seekers after truth and their favorable consideration to an important purchase is only gained by the force of logic.

Facts are Facts—one cannot ordinarily obtain genuine value without paying for it. This holds true of men as well as of merchandise—and automobiles.

The law of compensation is universal—one cannot in a regular way purchase \$2400 worth of anything (not even in automobiles) for \$1500.

Neither can a maker of anything (even an automobile) permanently ask and receive \$2400 for an article that is worth only \$1500.

THE MOLINE-KNIGHT AUTOMOBILE IS PRICED \$2400 FOR A SPECIAL REASON. IF IT COULD PROPERLY BE SOLD FOR LESS, THE PRICE WOULD BE LOWER.

We might ask and receive more than \$2400 and be on a false price basis.

We find that the right automobile at right price finds a constant, steady distribution.

We are selling our daily product as rapidly as we can turn it out.

Four to five perfect Moline-Knight cars is the daily average. The cars go to men—through dealers—who are governed by the **Rule of Reason.**

THE PRICE OF THE MOLINE-KNIGHT IS NOT ITS MOST IMPORTANT FEATURE. WE ARE NOT BUILDING CARS TO SELL AT A PRICE.

If we were building cars to fit a fixed low price we would not be building the Moline-Knight **OUR WAY.**

There is no patent on any scheme of automobile construction—there is one way to build low priced cars and another way to build Moline-Knights.

Why buy three dollar shoes?

Three dollar shoes represent the triumph of machinery in shoe-making—but there are many men who want better shoes than can be bought for three dollars—are not satisfied with a wholly machine-made product.

We are not in opposition or in competition with the makers of low priced automobiles. They occupy exactly the same relation to our position in the industry as the maker of three dollar shoes does to the better shoe at double the price—there is a wonderful field for both.

We are building 1200 Moline-Knight automobiles this year for 1200 men who do not wear \$3 shoes, **because they believe they will get more than twice as much service and satisfaction** out of one pair of \$6 shoes.

The analogy is simple—we have a quality car for quality men.

HOW DO YOU KNOW THAT THE MOLINE-KNIGHT CAR AT \$2400 IS GOING TO GIVE YOU MORE THAN TWICE AS MUCH SERVICE AND SATISFACTION AS A CAR AT HALF THE PRICE?

You do not know—but you will investigate and find out if you are the careful buyer that we think you are.

The purchase of any automobile at any price is a serious investment—once people bought automobiles quickly as they might buy shirts or collars or a load of coal.

They were impatient to ride and the makers could not keep pace with the demands of an army of buyers.

We are all out of that period.

You men who buy automobiles and sell them have learned a few things. It is well that you are in this new position, because we believe that as careful men become more insistent on getting their dollar's worth in every particular, then in that group there will be 1200 men who will (after investigation) put their hand on the Moline-Knight and say to the good dealer who has introduced them to our car—

"This is the car I want"

We know that you are not going to send us a check for \$2400 and say, "Send me a Moline-Knight."

We know that you are not going to walk into the dealer's salesroom and buy any car that way.

We do know that you will measure the automobile you purchase by your standard of efficiency or if you are not qualified to pass judgment on automobiles, you will seek the advice of a man who knows.

The Moline-Knight asks nothing more of the man who buys or sells a car than that he shall buy it the right way. We like to have Moline-Knights go to men who have been convinced by the **quality of the car** and not by the **talk of the salesman**.

Cars that are sold this way stay sold—it does our good automobile no credit if it goes to a customer by the wrong talk route.

Come on right out in the open

Motor car history is being written with an indelible pencil **right now**—every day.

Just as the car maker has his problems, so you, too, as a dealer, have your own merchandising problems.

The \$2400 Moline-Knight has jumped to the front so rapidly because there is a place for it in the automobile industry.

Here at last is a classy, high grade, powerful car for the man who wants the best and who does not want to spend \$3000, \$4000, or \$5000—you know the kind I mean—the man with means who applies his shrewd business knowledge in buying a motor car.

And you know that in the last few years all makers of poppet valve motor cars have reached about the same state of efficiency. For this reason they are now being sold on a price basis and one dealer of a poppet valve car has about the same arguments as another.

Your poppet valve competitors will all be in competition with each other—you will only have one competitor—the poppet valve, regardless of its make.

Get the idea!

At least it's worth while investigating. So before you lay this letter aside, write us—tell us what you **have done**—and we will tell you **what we can do for you**.

MOLINE AUTOMOBILE COMPANY

EAST MOLINE, ILL.

RAYFIELD

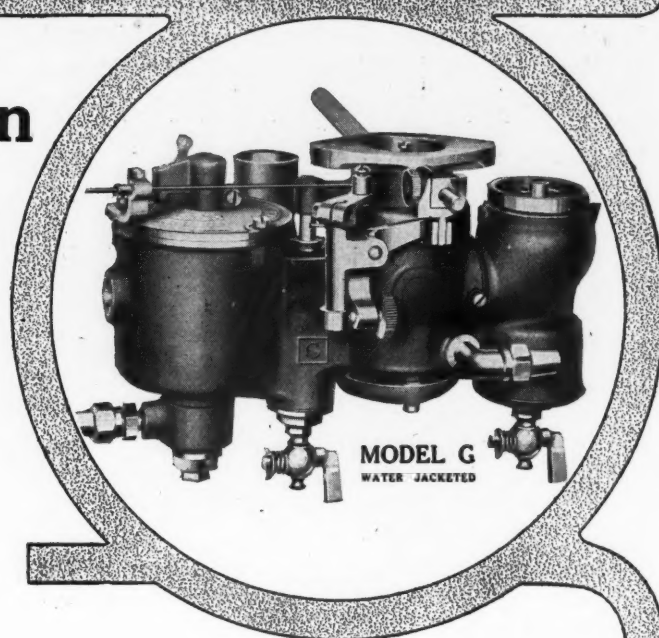
CARBURETORS

Better than foreign carburetors, too.

There is at least one point in which American automobile builders surpass foreign makers, and that is in carburetor design.

The marvelous Rayfield Model G Carburetor is not only a better carburetor than any of its American competitors, but better also than any foreign carburetor. Even on foreign cars themselves, the Rayfield gets a far better performance from the motors.

Take some pride in this fact, and when another praises foreign cars, ask him to match the Rayfield Carburetor with any foreign device.



MODEL G
WATER-JACKETED

More mileage per gallon of fuel
More power Greater speed Quicker getaway
Greater all-around flexibility

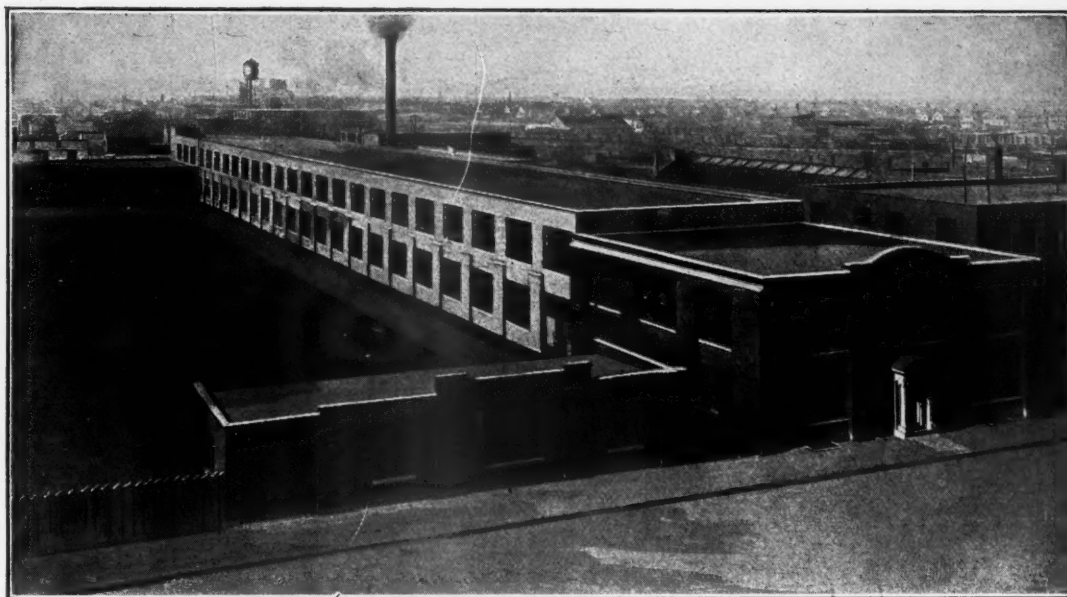
All these points of superiority are unqualifiedly guaranteed for every car and in comparison with any carburetor.

The Rayfield adjustment is simple, not complicated. If you want to banish carburetor troubles forever and give your car a life and vigor it never had before, get a Rayfield.

Ask Any Good Dealer

FINDEISEN & KROPF MFG. CO.
 2109 Rockwell Street CHICAGO, ILLINOIS

BRANCHES: 1140 Michigan Ave., Chicago 1211 Woodward Ave., Detroit 1902 Broadway, New York



Houk Manufacturing Company's Plant—Buffalo, N. Y.

World's Largest Wire Wheel Factory

The demand for wire wheels in this country has increased so rapidly that the plant of the Houk Mfg. Co., at Buffalo, N. Y., is now the largest of its kind in the world—surpassing in size even the greatest of the European factories.

The popularity of wire wheels is steadily increasing. A year or two from now a car without wire wheels will be as antiquated as a car without a self starter.

Specify the leaders:

HOUK

Detachable

Wire Wheels

Made in Sizes to Fit All Cars

Manufactured by the Houk Mfg. Company, for the
Geo. W. Houk Co., 1702 Elmwood Ave., Buffalo, N. Y.

USE THIS COUPON

Geo. W. Houk Co.
1702 Elmwood Ave.
Buffalo, N. Y.:-

Without obligation on
my part send me catalogue
and prices on Houk Wire
Wheels for a

Model..... Rim size.....

Name

Address



"The Starter that Starts Her"

Makes *your* car fit for your wife to drive—not to mention yourself.

Really starts *any* car. Installed in a few hours. Special outfit for everybody's FORD.

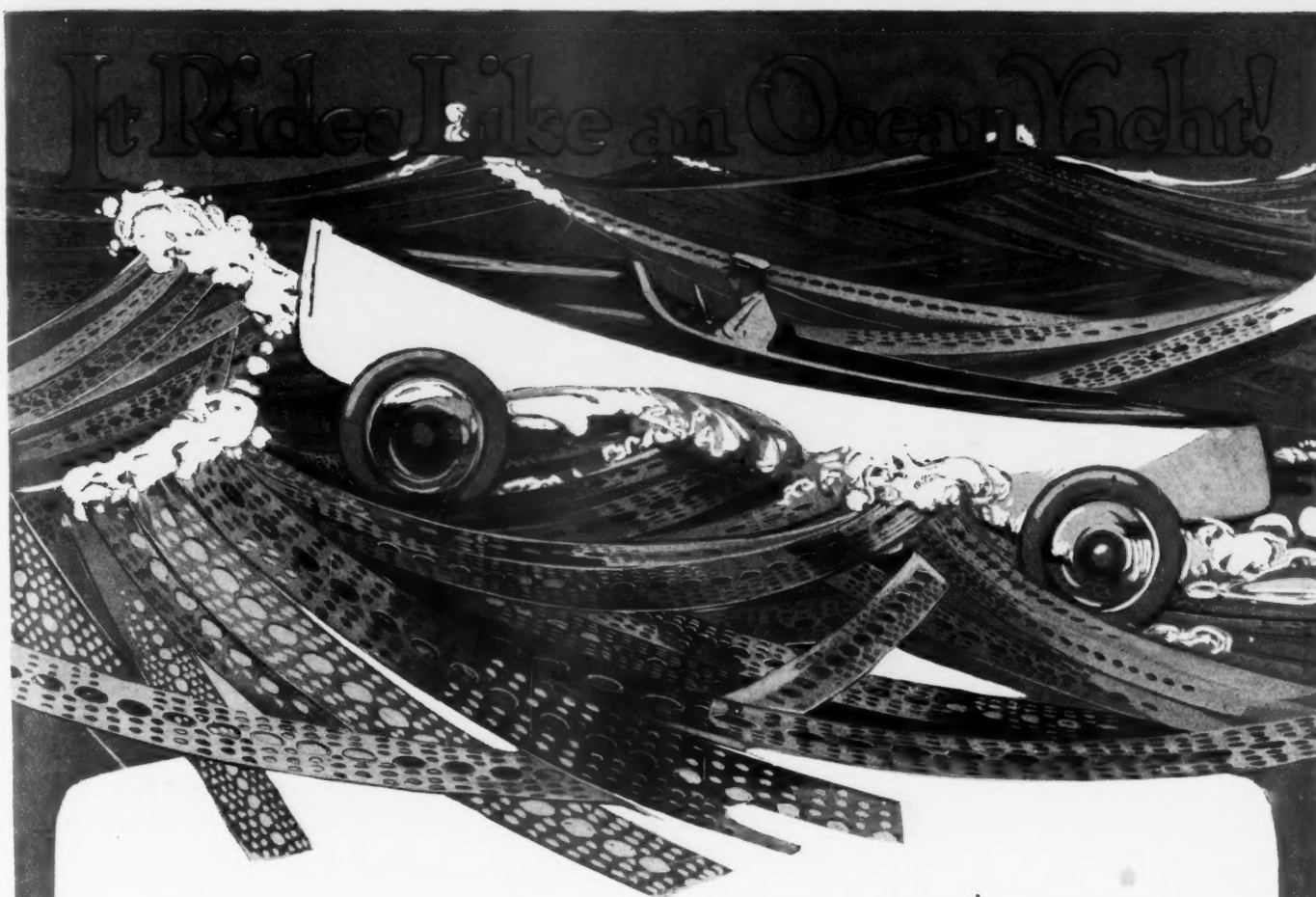
A starter that really **startzer!** Think of that! Do you want one? (Can a duck swim?) The **startzer!** is an apparatus which has been slowly evolved by a real engineer to meet a real need which has not been met by the hand crank, the foot cranker, or the electric starter. Not only in theory, but in actual practice **ALL YOU DO IS PUSH THE PEDAL.** The **startzer!** really starts her because it gives the engine what it needs—sudden compression and plenty of it. Also because it primes the cylinders with acetylene or gasoline when conditions call for it. Its power is that of a coiled flat spring, rewound and locked by the engine. Its simplicity, certainty and fool-proof strength are all due to the fact (honest!) that we found that a spring has two ends. **THE BOOKLET TELLS WHY. WRITE NOW. Prices: For Fords \$75.00. For other cars, \$85.00. Money back if desired after 30 days trial.**

GOOD DEALERS can still get **GOOD TERRITORY.** A **startzer!** owner is a **startzer!** fan, and won't let his friends rest until they have one, too.

SEND FOR BOOKLET

AUTOMATIC DEVICES COMPANY

503 KELLOGG STREET, GALESBURG, ILLINOIS



THE car whose springs are equipped with DANN Insert glides over bumps as an ocean yacht glides over waves—smoothly, gently, soothingly. A month's tour into the country in a car equipped with DANN Insert passes with as much comfort as a ten minute jaunt along the boulevard. DANN Insert takes the fatigue—the "rough riding"—the mechanism-killing vibration OUT of a car.

The DANN OIL CUSHION SPRING INSERT

"The Insert of 10,000 Oil Pockets"

DANN Insert keeps all the shock-absorbing qualities in your springs. They *can't* become vibration conductors, because DANN Insert provides *permanent* lubrication between every spring leaf. Your springs can't rust, dry, squeak or solidify. DANN Insert is standard equipment on the Winton Six and on a number of other high-priced cars.

The same reason that induced the Winton Co. to adopt DANN Insert should convince you of the need of installing it in your car.

These reasons are elaborately set forth in our handsomely illustrated booklet entitled "Why Cars Wear Out," just off the press. It is most interesting and instructive and is free for the asking. Write for it.

FORD MOTORISTS: We are prepared to supply **DANN FORD INSERT**, neatly packed in a box, with instructions, and ready for immediate installation in the springs of any Ford car. Write for full particulars. Dealers wanted everywhere.

"Oil Cushionize Your Springs!"

DANN OIL CUSHION SPRING INSERT COMPANY
2252 Indiana Avenue Chicago, Illinois



\$9.50 to \$15.00

SPARTON

ELECTRIC MOTOR DRIVEN AND HAND OPERATED SIGNAL

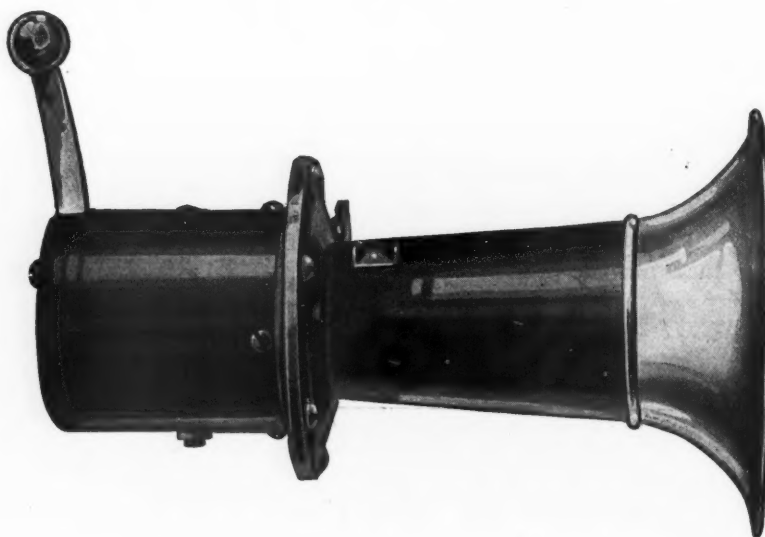
The motorist cannot afford to depend on a good enough warning signal. When the time comes for action, he must have a horn that will compel quick, unthinking, instantaneous jumping—such is the discordant, action-compelling growl of the SPARTON when the button is pushed home. On country stretches a good pressure on the button produces a warning clarion that can be heard a mile down the road, giving everyone time to get out of the way. On city streets a light touch produces an inoffensive, but authoritative command, warning people at close range.

**Hand
Operated**

\$7.00

and

\$8.00



**Hand
Operated**

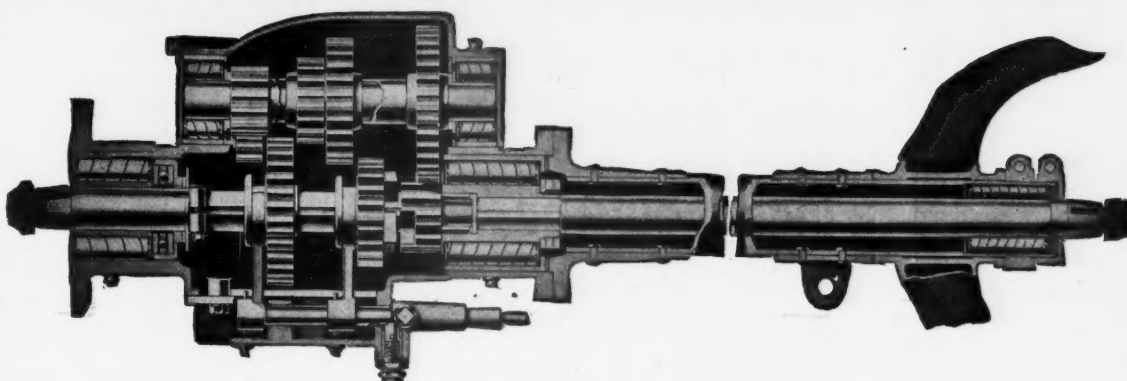
\$7.00

and

\$8.00

The Sparks-Withington Co., Jackson, Mich.

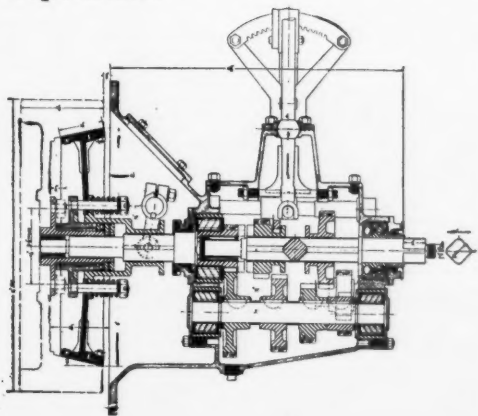
COVERT TRANSMISSIONS



Embody These Four Great Factors

*Quality
Durability*

All four of these elements must be present to insure a successful transmission. They are interdependent, one on the other, and it is because COVERT TRANSMISSIONS possess them to a degree not approached by other makes that discriminating engineers choose them for use in the cars and trucks for which they are responsible.



*Silence
Strength*

Their presence is an assurance of efficiency and a protection against transmission troubles. They indicate quality construction and their name helps to sell the completed product.

Investigate the method of making COVERT TRANSMISSIONS and the names and experiences of those who use them and you will conclude that your product will be better because of them.

The leading axle manufacturers have made their flanges to fit the Covert construction while the unit power plant models are standardized. Our engineers are at your service to help you adapt COVERT TRANSMISSIONS to your construction.

Covert Motor Vehicle Co.

Factory
Lockport, N. Y.

Sales Office
Detroit, Mich.

Careless or improper adjustment will spoil the efficiency of any piece of machinery. For care free service, automobile bearings should be non-adjustable—so that they are not at the mercy of the inexperienced user.

Hyatt Quiet Bearings, properly installed at the factory and given a little lubricant every once in a while have a life time of efficiency unequalled in any other bearing, because they are not adjustable.

Two books, one about motor car bearings in general for prospective purchasers, the other for automobile owners, will be sent on request.

"Hyatt Quiet Bearings"

HYATT ROLLER BEARING Co.
DETROIT, CHICAGO
NEWARK, N.J.



Car dealers are making big money selling the Stewart Tire Pump

Car dealers should sell a pump with every car—

BECAUSE the greatest expense to a car owner is his tire expense—three quarters of this tire expense is due to under inflation—and the Stewart Tire Pump absolutely insures against under-inflation.

The last thing on earth a car owner wants to do on a hot day—or any other day—is to try to pump up a tire by hand. *There is no labor connected with the Stewart Tire Pump.* The motor does the work.

Car owners have "taken" to the power pump idea—they *all* want one—very few of them have one.

And having decided to get a power pump, they all want the *best* pump at the *most moderate price*. The Stewart is the best tire pump on the market, and retails at only \$15.

It is the most efficient, finely finished and reliable tire pump made. The piston is steel; the connecting rod hardened steel; the cylinder beautifully finished, having

fins for perfect air cooling. The piston is oiled by rubbing against a wick upon which oil is dropped from the outside. This is the *only* piston pump that absolutely prevents oil from getting into tires. It has no leather or rubber packings to wear out and cause leakage. The base is aluminum. The retail price, with air pressure gauge and 13 feet of high grade hose, complete including bracket and gears to install on car, only

\$15

When ordering, give name, year and model of car the pump is wanted for.

The Stewart Tire Pump is the liveliest accessory you can handle at the present time. Put in a stock now and corral the big end of the business in your vicinity. We supply pump complete with bracket and gears ready to install on your car. Write today for our Dealers' Proposition.

Stewart Tire Pump, with complete fittings for immediate installation, may be had for the following cars (this list is being added to almost daily):—



CAR	MODEL	YEAR	CAR	MODEL	YEAR
Abbott Detroit	35	1914	Oakland	35	1914
Abbott Detroit	44-50	1914	Oakland	6-60	1913-14
Abbott Detroit	6-Cyl.	1914	Oakland	42	1913
Auburn		1914	Oldsmobile	6	1914
Buick	24 & 25	1913-14	Oldsmobile	42-4	1914
Buick	24 & 25	1914	Overland	79	1914
Buick	Big Six	1915	Overland	71	1913
Cadillac		1913	Overland	69	1913
Cadillac		1914	Packard	1-38	1914
Case	40	1914	Packard	3-48	1914
Case	25	1914	Packard	30	1908
Case	35	1914	Packard	30	1909
Chalmers	Little Six—26	1914	Packard	30	1910
Chalmers	Big Six—6-60-24	1914	Packard	30	1911
Cole	4-Cyl.	1913	Packard	30	1912
Cole	6-Cyl.	1914	Paige	36	1914
Cole	4-Cyl.	1914-15	Paige	25	1914
Cartercar	5A	1913	Pathfinder		1913
Cartercar	5A	1914	Pathfinder		1914
Cartercar	7	1914	Rambler	Cross Country	1913
Ford			Reo	The Fifth	1911
Hudson	6-40	1914	Reo	"	1912
Hudson	6-54	1914	Reo	"	1913
Havers Six		1913	Reo	"	1914
Hupmobile	52	1914	Studebaker (EMF)	4-30	1912
Jeffery	4	1914	Studebaker (EMF)	4-20	1912
Lexington Howard	4	1914	Studebaker	4 & 6 Cyl.	1913
Lexington Howard	6	1914	Studebaker	4 & 6 Cyl.	1914
Maxwell	25	1914	Wescott	4-40	1912
Maxwell	35	1914	Wescott	4-40	1913
Maxwell	6	1914	Wescott	6-30	1914
Mitchell	6	1913	Wescott	6-30	1915
Mitchell	Baby Six	1912			

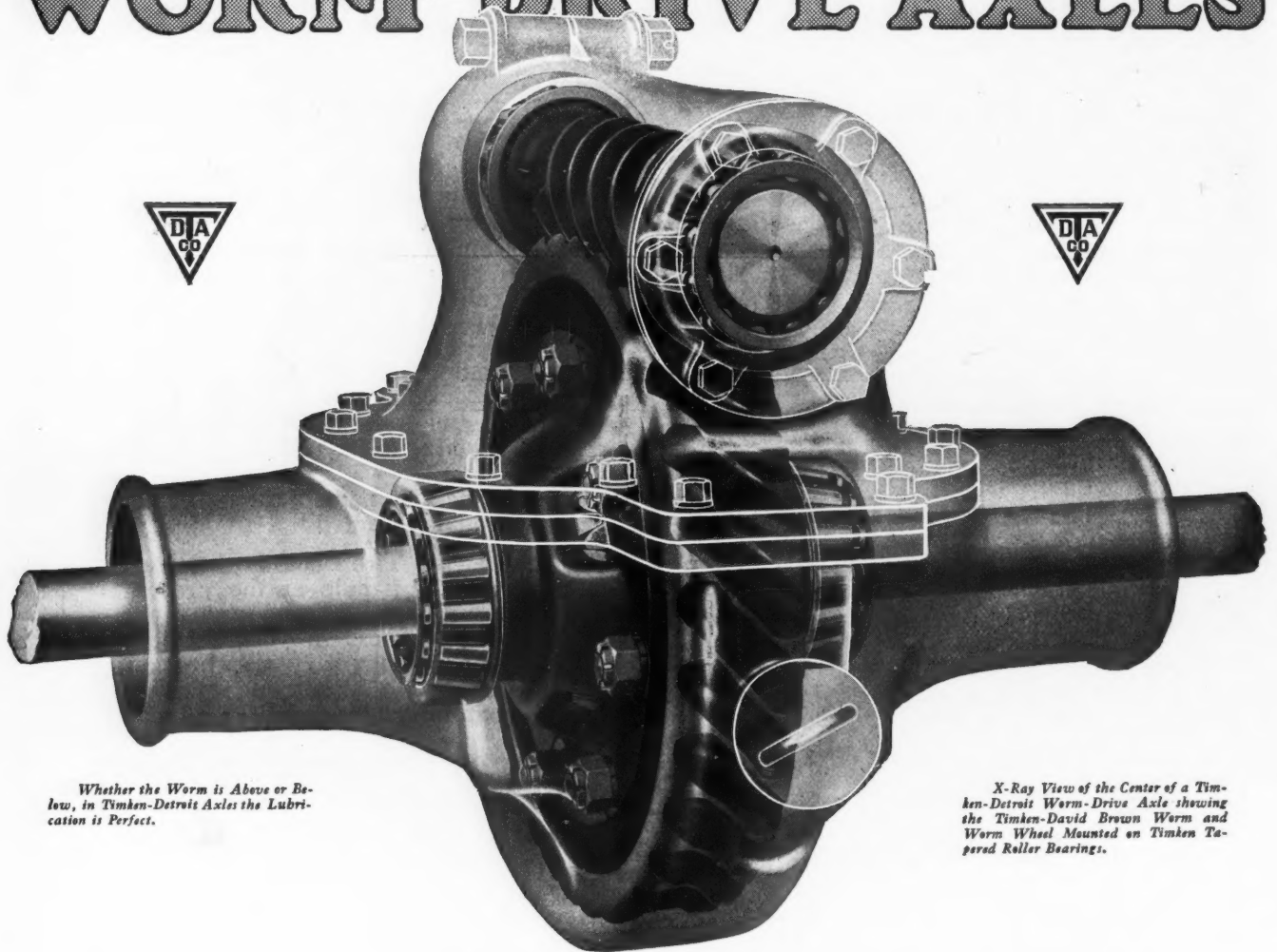
Stewart Warner Speedometer Corporation

Executive Offices: 1967 Diversey Blvd. Chicago

Factories: Chicago and Beloit, Wisc.

17 Branches. Service Stations in all cities and large towns.

TIMKEN-DETROIT WORM-DRIVE AXLES



Whether the Worm is Above or Below, in Timken-Detroit Axles the Lubrication is Perfect.

X-Ray View of the Center of a Timken-Detroit Worm-Drive Axle showing the Timken-David Brown Worm and Worm Wheel Mounted on Timken Tapered Roller Bearings.

Proved Right In Service

Worm drive is highly efficient. Retains full efficiency as long as it lives. Lives as long as any other form of drive—or longer. And grows better with age.

Worm drive is quiet—dead quiet—and stays quiet through life. It is the simplest drive, the cheapest to operate, the least expensive to keep in repair.

These things have been proved by the stock cars and the test cars of the great majority of commercial car builders. Proved in tests and in actual service.

A large proportion of worm-drive commercial cars are equipped with David Brown or Timken-David Brown Worms. A great many with Timken Tapered Roller Bearings or with Timken-Detroit Axles that contain both Timken-David Brown Worms and Timken Tapered Roller Bearings.

Although Timken-Detroit Worm Drive Axles have been in all kinds of severe service in all parts of the land during the past twelve months and more—

Not a single case of failure of any part in all this service has been reported to us.

We know of several David Brown Worms that have run over 60,000 miles and are just as silent and efficient as when first installed.

This is due to right design, to right materials in worm and wheel, to special machines that do extremely accurate work and to a final grinding that is possible only with the David Brown type of worm.

Timken-Detroit Worm-Drive Axles are made in several sizes for various horse-powers and for weights up to 11,000 lbs. on rear tires; that is, up to three or four ton capacity depending on the distribution of weight.

Engineers who are designing worm-drive commercial cars should write for blue prints and data to

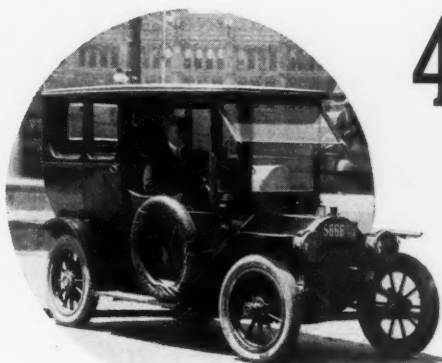


The Timken-Detroit Axle Co.,
DETROIT, MICHIGAN



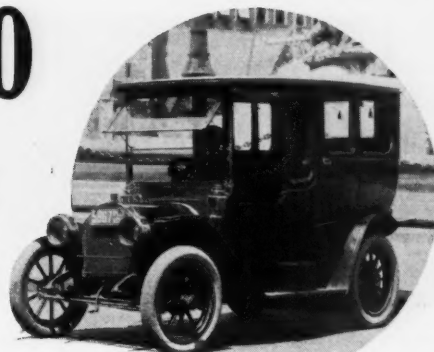
When Writing to Advertisers, Please Mention Motor Age.

The Easiest Riding Car In The World"



Marmon Car No. 1 driven over 200,000 miles

**450,000
Miles
In
Daily
Service**



Marmon Car No. 2 driven over 250,000 miles

It will pay you to read this letter carefully

It forms one of the greatest documents of automobile history. It is part of the uncompleted story of two cars that have covered a distance equal to 18 times around the world—and are still giving satisfactory service.

Read every word of this letter—

The Horace F. Wood Transfer Company
INDIANAPOLIS, INDIANA.

July 8, 1914.

Nordyke & Marmon Co.,
Indianapolis, Ind.

Gentlemen:

In 1909 I began using Marmon motor cars exclusively in my automobile livery service. I was influenced to adopt the Marmon as my standard equipment, after experimenting with various other makes, being convinced that for the lowest upkeep cost, I could get more and better service from the Marmon. At the present time I have a fleet of eighteen Marmon cars, which are in service 24 hours per day and 30 days per month. I believe we have not lost a day a month with them, on an average.

Car number one has been driven over two hundred thousand miles and car number two has been run over two hundred and fifty thousand miles.

The rest of these cars have gone from twenty five thousand to one hundred thousand miles each and all are in good condition today.

It is commonly stated that the depreciation on a motor car is 50 per cent the first year. I have not a single car in my fleet I would sell for 75 per cent of the first cost as I believe they are as good as when I purchased them. All are working and none are for sale.

Respectfully,

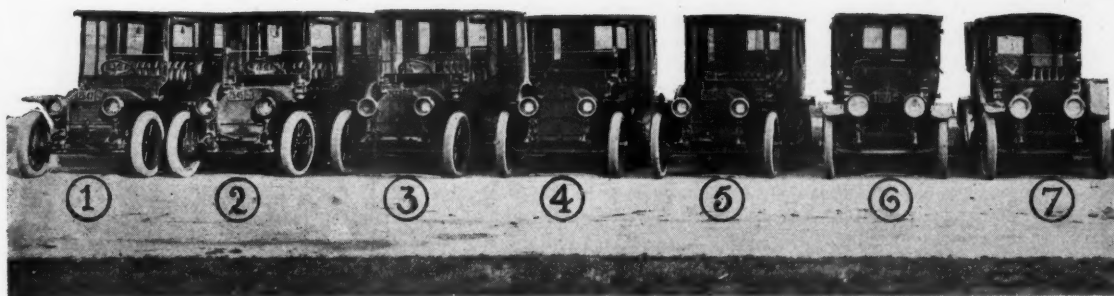
The Horace F. Wood Transfer Co.,

By *Horace F. Wood*
Pres.

Sixty Years of Successful Manufacturing"

When Writing to Advertisers, Please Mention Motor Age.

The Easiest Riding Car In The World



PART OF THE HORACE F. WOOD EQUIPMENT OF MARMONS

Here are the records



Dick Riley

—has piloted the old Marmon No. 2 over 80,000 of the more than 250,000 miles it has covered. Riley has taken a number of parties on long trips appraising farm lands and knows about every good and bad road in Indiana, Ohio and Illinois. He says: "I've taken that old Marmon over the worst roads in three states, in Summer and in Winter, but she's never given me a minute's trouble."

No. 1 1909 Marmon purchased in September, 1909. Operated continuously since that time. Records show over 1700 days of service and a mileage in excess of **200,000 miles**.

No. 2 1909 Marmon purchased in September, 1909. Used in long road tours in summer and operated continuously in winter livery service. Records July 1st, 1914, establish a record of over **250,000 miles** in service for this car.

No. 3 1909 Marmon, purchased in March, 1910. Established a mileage record of over **100,000 miles**.

No. 4 1909 Marmon purchased in March, 1910. Operated continuously since that time. Mileage on July 1st, 1914, over **150,000 miles**.

No. 5 1910 Marmon, purchased in August, 1910, and operated in daily service since that time. Mileage in excess of **100,000 miles**.

No. 6 1910 Marmon, purchased in April, 1911, to take the place of car of another make which failed to make good. Has covered over **100,000 miles** in service.

No. 7 1910 Marmon, purchased in September, 1911, and now entering its second hundred thousand miles of service.

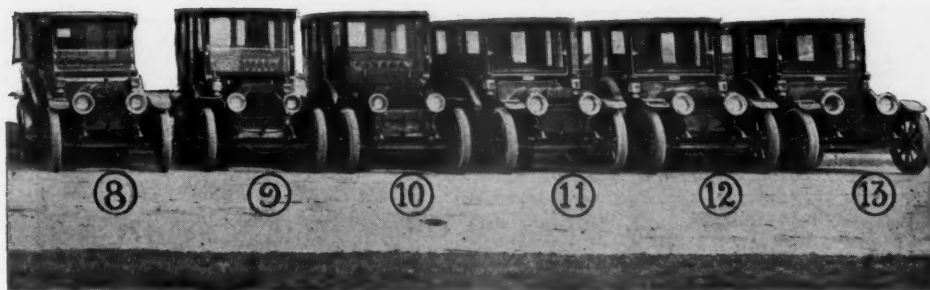
250,000 miles in daily service is to our minds a greater Marmon record than the winning of the first 500 mile International Sweepstakes by the Marmon or any of its other world-famed victories in contests—certainly it's a greater mechanical achievement.

It is the sort of record that means actual, cash value to you in the car you buy or, sell.

Sixty Years of Successful Manufacturing

When Writing to Advertisers, Please Mention Motor Age.

The Easiest Riding Car In The World



*Five Other
Marmon Cars
in the Woods
Service Have
Gone Over
25,000
Miles Each*

TWO OF THESE CARS HAVE GONE OVER 200,000 MILES EACH

Here are the records

No. 8 1910 Marmon, purchased in September, 1911, making the eighth car in the Wood service that has completed over 100,000 miles.

No. 9 1910 Marmon, purchased in November, 1911, will pass the 100,000 mile mark in service during the month of August, 1914, at its present rate.

No. 10 1912 Marmon, purchased in April, 1912, and shows a mileage above 70,000 miles.

No. 11 1911 Marmon, purchased in April, 1912, has passed 50,000 miles in service.

No. 12 1912 Marmon, purchased in March, 1913, has passed the 50,000 mile mark.

No. 13 1913 Marmon, purchased in March, 1913, and has completed over 25,000 miles.

No. 14 1910 Marmon, purchased in April, 1913, has completed over 30,000 miles.

No. 15, 16, 17 and 18 include four Marmon cars purchased during the present season, one being equipped with roadster body and another with special funeral car body. This hearse recently was used on a 140-mile road trip in a single day. Every one of these cars is making good.



Al. Fisher

—has driven Horace F. Wood's old Marmon Number 1 over one hundred and thirty-five thousand of the more than 200,000 miles it has covered, during the past five years. Speaking of this car's remarkable service Fisher says: "A better, sweeter running motor never was made. Why, I'd pit that old car against almost any new car. Another thing about it—it's easy on tires, one set carried it for almost two years through all kinds of roads and weather."

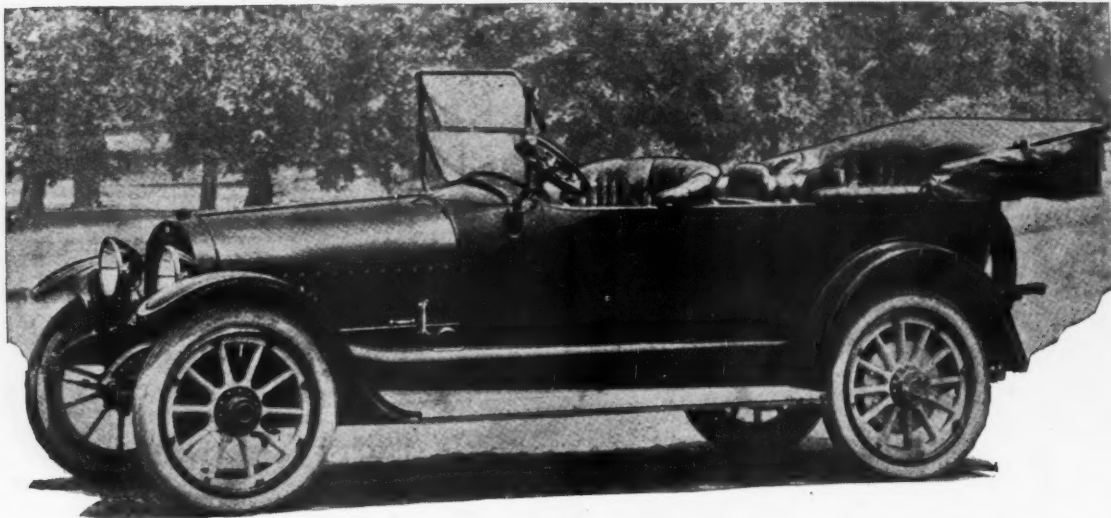
Some propositions may look better **before** you buy. It's the proposition that looks best years **after** you buy that means real value for the owner and profit for the dealer.

There's a big and important message here for every man who buys or sells a car.

Sixty Years of Successful Manufacturing

When Writing to Advertisers, Please Mention Motor Age.

The Easiest Riding Car In The World



The New Marmon "41" Medium Six, \$3250

The men who designed and manufactured the Marmon cars described on the preceding pages—cars whose records run at 100,000, 200,000, even 250,000 miles of satisfying service—say of this latest Marmon:

"It is the best car we have ever made!"

The milestones of remarkable service stand behind the old Woods cars and hundreds of other Marmons.

The same capabilities are the heritage of this new Marmon.

And this ability to give satisfaction through hundreds of thousands of miles in daily service forms the greatest selling asset any dealer can possess or any buyer desire.

Isn't there real profit in this for YOU?

Marmon "41" is the only car with "center fire" "L" head engine—with the wonderful new Bosch lighting and starting system—with the famous Marmon continuous circu-

lating oiling system—with point after point which makes it the only car for the man who demands the best.

The complete mechanical description will be mailed you on request.

Figure what it means to handle such a car

When you sell it—it stays sold.

It goes on making friends helping you to sell other cars.

Every such car you sell is an asset to your credit as a dealer—a standing advertisement that accumulates prestige with every added year of service.

Its buyer is the man of influence—and this influence comes to your aid in the owner's praise of his car.

There's some big man in your town who wants this car today—who has waited for it.

The profit is yours for the asking

Write NOW!

**The Marmon "41"—132-inch Wheelbase, \$3,250
The Marmon "48"—145-inch Wheelbase, \$5,000**

Detailed Information on Request

Nordyke & Marmon Company

Indianapolis

(Established 1851)

Indiana

Sixty Years of Successful Manufacturing

When Writing to Advertisers, Please Mention Motor Age.

The Best in Automobile Fabric Development

BEGINNING A SERIES OF TALKS

ON

Laidlaw
BURBANK
MOTOR CLOTH

FEW people, whether automobile owners or manufacturers, realize the amount of thought and scientific research which has been expended in developing fabrics for covering automobile tops.

The ideal automobile top fabric must not only be waterproof when new but must remain waterproof, hold its color and shape, and not stretch or shrink. It must fold easily and compactly at the same time not break or crack the cloth or any part of it. It must be just as serviceable in the winter blasts of Minnesota as in the summer heat of Florida because it is a practical impossibility for the American automobile manufacturer to vary the equipment of his cars in accordance with

the part of the country to which they may be shipped.

The service of the ideal automobile fabric must be very much like our national laws—equally as

applicable to conditions as they exist from coast to coast and from Canada to the gulf.

It is a well-known fact that extremes of heat or cold injure rubber or artificial leather—therefore, the accomplishment of a perfect top covering demands the elimination of these component articles.

Laidlaw-Burbank Motor Cloth for covering automobile tops is one solid piece of cloth, single thickness, so constructed and woven as to be absolutely waterproof. In as much as neither rubber or artificial leather compounds are used in their man-

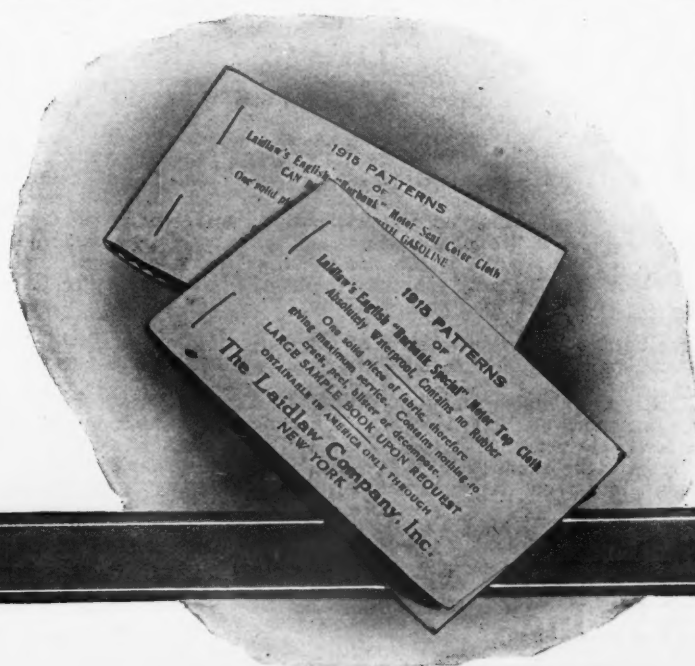
ufacture, they are not dependent upon any of the perishable compositions ordinarily used to cement two thin pieces of cloth together, making the so-called mackintosh cloth—or coating them over, making the artificial leather or rubber coated cloths. Such fabrics as utilize rubber or artificial leather compositions to make them waterproof do fairly well under certain conditions of temperatures for a limited period of time, but they are not the perfect cloth for country wide use where conditions vary, but where reliable protection is the very thing top covering cloth is intended to accomplish.

You demand the latest mechanical devices for your car, why not also get the best in fabric development?

Be guided by the experience of Laidlaw-Burbank users. We will be glad to tell you who they are.

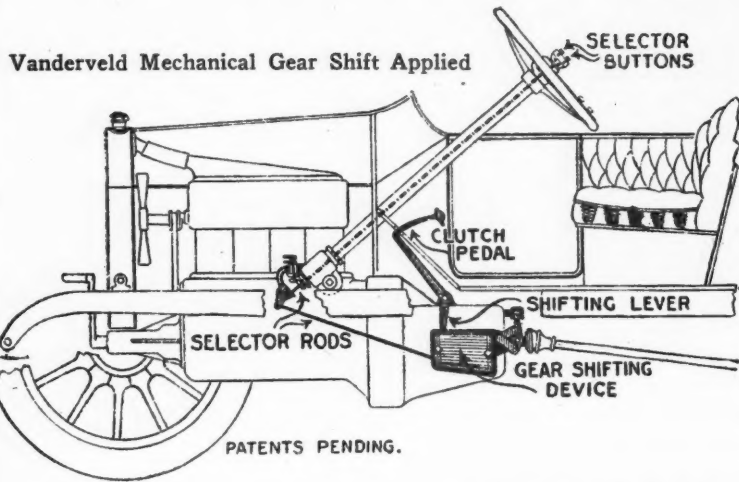
The Laidlaw Co., Inc.

126-32 W. 46th Street
New York N. Y.



When Writing to Advertisers, Please Mention Motor Age.

THE AUTOMOBILE USER WANTS A POSITIVE Mechanical Gear Shifter



S ELECTION of gear by *Mechanical Push Button* placed at top of steering column, gives the driver added **Comforts** and makes gear shifting a **Pleasure** in traffic, on hills and difficult roads. Eliminate the hand-gear shift lever. This **Mechanical Gear Shift** is readily mounted with practically no change necessary by the motor car builder.

Invaluable for commercial cars.

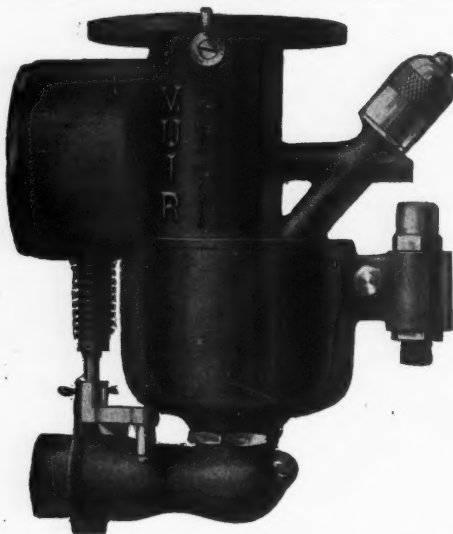
Guaranteed by a company of unsurpassed business reputation.

GET PARTICULARS NOW

Grand Rapids Show Case Co.

Engineering Department

Grand Rapids, Mich.



You don't expect EVERY suit of clothes to fit you.
You wouldn't expect EVERY carburetor to fit your motor.

MUIR

The "Made-To-Order"
CARBURETOR

is scientifically and exactly "cut to fit" your motor. This is not a figure of speech, it is an actual fact. Every make and model of motor before we supply a carburetor for it, is carefully tested on our dynamometer block at every speed and under every load. The highest efficiency proportion of gas and air is carefully noted and plotted; and then this curve is cut into the cam, which is placed in the carburetor. Thereafter, absolutely the same high efficiency mixture is perpetually maintained automatically.

For ten years engineers have battled with the problem of gasoline motors' peculiarities and yet although they are as diverse in characteristics and shape as human beings, we have expected one suit to fit them all.

THE MUIR CARBURETOR is the simplest, most scientific and thoroughly successful carburetor yet placed on the market. It is in no sense one more of the great mass of mixing valves and spring regulated combinations which have flooded the market for some years. THE MUIR CARBURETOR is a laboratory made product and the cam which measures or meters out the exact ratio of gas or air which gives the highest efficiency at every speed for a particular motor, has been plotted on the dynamometer block and cut from the hardest chrome nickel especially to fit the motor.

These are some of the reasons why you should get our literature and become familiar with the only carburetor that will give scientifically perfect results.

MUIR COMPANY, Inc.,

Detroit, Mich., Dime Bank Bldg.
Baltimore, Md., Equitable Bldg.

The Brown Jr.

\$ 70.00 AND IT'S WORTH IT

Here is a Tire Pump That is
Especially Adaptable for Fords
and Other Small Cars



This little pump is made of grey iron bored and reamed. Can't get out of order. Won't overheat and stick in the cylinder. Always works. Pumps pure cool air. Saves your time, temper and tires. Wears forever. Nothing like it at anywhere near the price. Find out all about it. Your dealer or your neighbor knows; if not, ask us.

THE BROWN COMPANY

120 Bellevue Avenue,

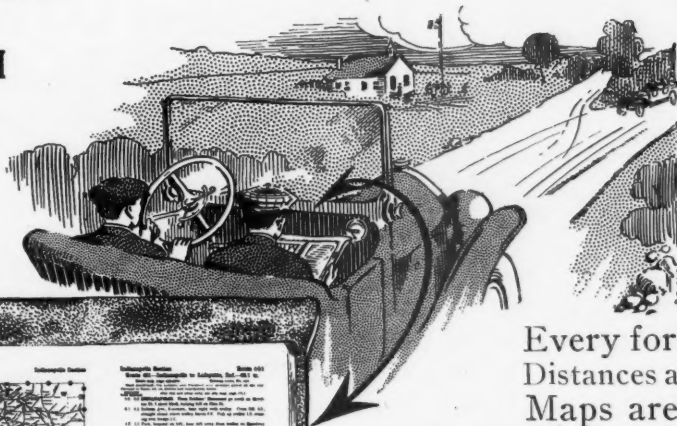
Syracuse, N. Y.

Manufacturers also of Eclipse Shock Absorbers especially designed for Ford cars. The only shock absorber on the market that absorbs shocks, minimizes rebound and prevents side sway. Sold under an absolute guarantee of satisfaction for \$10 per set of four.



"20.3m. Fork at Schoolhouse on Left, Bear Right"

ACCURATE
to the
TENTH
of a
MILE



Tour in
Comfort
with the

AUTOMOBILE BLUE BOOK

Every fork and turn plainly mentioned
Distances are all measured by Blue Book cars
Maps are extremely simple and clear

Requires No Concentration to Follow

Our Touring Service Bureau is at the disposal of every Blue Book user for advice and help on contemplated trips

Vol. 1, New York and Canada
Vol. 2, New England

Vol. 3, New Jersey, Penna. and Southeast
Vol. 4, The Middle West

Vol. 5, Mississippi River to Pacific Coast

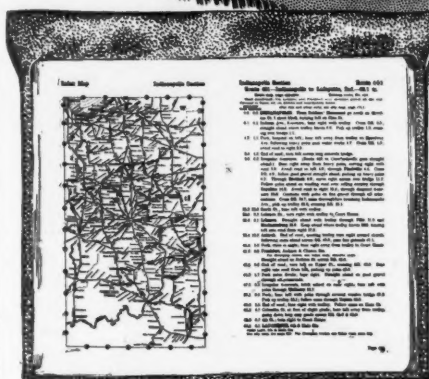
IN FIVE VOLUMES—\$2.50 PER VOLUME

On sale at leading Book Shops, Auto Supply Houses and Garages,
Department Stores, News Stands—Or sent direct from either office.

The Automobile Blue Book Publishing Co.

910 S. Michigan Ave., Chicago

2160 Broadway, New York City



Reproduction of Blue Book Open in Holder

New Departure Ball Bearings



A Fair Question Deserves a Fair Reply

IN designing your next car, the question of bearing equipment will, of course, receive the serious consideration so important a question deserves.

In all fairness, New Departure ball bearings more than answer that question.

It is a bearing of guaranteed quality, including high grade materials, accuracy of finish, and uniformity of dimension. It is the product of an American factory with ample capacity for prompt and complete deliveries without liability of troublesome delays such as are sometimes experienced by manufacturers who buy their bearings abroad.

Why not give New Departures a thorough tryout?

A line from you will bring our literature and representative. May we send either or both and inform you fully of our proposition?

The New Departure Manufacturing Company, Bristol, Conn.

Western Branch, 1016-17 Ford Bldg., Detroit, Mich.



BUDA MOTOR

A LETTER FROM A CAR MANUFACTURER

"We have nothing but the highest words of praise for your product and have not failed at every opportunity to advertise that **WE ARE INSTALLING THE BUDA MOTOR** in our machines."

We like to receive, and do receive, many letters like the one from which this is an extract. The letter is from the manufacturer of a very remarkable car. We will give you the name if you ask it.

The Unequalled Buda Six

is being adopted by the manufacturers of some famous fours who are now adding the Six to their lines, because The Buda Six, Models "SS-3" and "SS-U" has *no superior* in the whole automobile field, no matter what the price. Both scientific and practical tests will prove this for any interested manufacturer.

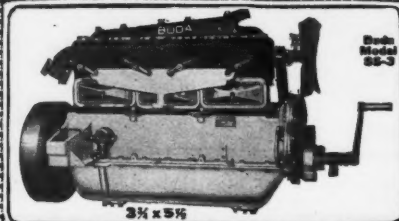
THE BUDA COMPANY

FACTORY, HARVEY, ILL. (Chicago Suburb)

Address all correspondence to our **FACTORY REPRESENTATIVES**

BRANDENBURG & COMPANY

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\$15, \$20, \$25, per Set of Four; Half that per Pair

Longer life for your Car—Easier Riding for its Occupants

¶ The *only* device that retards only the up-stroke of the springs, preventing abrupt or excessive rebound—the cause of jolts and jars.

¶ Passengers ride in comfort *on the seat* instead of being tossed *from it*.

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¶ Standard Factory Equipment on White, Peerless, Stearns, Oldsmobile and Lozier; partial or special equipment on over 20 other leaders. Ask the Engineering Department of YOUR car—they know what Snubbers will do.

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There are few mechanical "lemons" on the market today. Car builders have practically perfected the chassis and are turning to the appearance of the car to make improvements with "stream line," "concealed hinges," "crowned fenders," "two-door touring cars," etc.

You can put the finishing touch on the line you sell with

CAMPBELL Water Proof ESTABLISHED 1879 Seat Covers

You can emphasize every feature of design with the rich, refined appearance of Campbell Seat Covers. You can "close" customers that your competitor cannot because his line lacks the distinction seat covers give to a car.

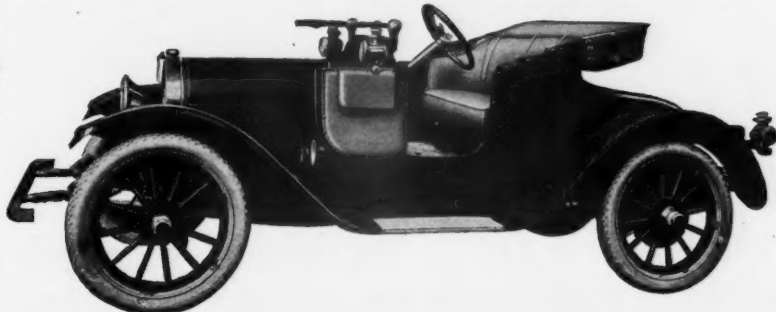
Write us today for our 1915 proposition on the best fitting, best looking seat covers ever made. Don't make the mistake of equipping

your line with cheap covers that won't fit to begin with and will fade in a week and destroy the beauty of the car. Get the best to be had—Campbell. The cost is very little more. The results are beyond comparison.

Write for our proposition. Get the Campbell agency and the big profits that go with it.

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Buick 36—
Seat Covers
and Dust Hood.
Retail
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and Campbell
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will give your
line the "looks"
that mean
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Pneumatic **Tires**

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PROOF OR MONEY
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Prevent Skidding
with this sharp, sturdy, scientific "Zig-Zag" Non-Skid. Doubles the rubber thickness of the tread—assures double service

Avoid

Punctures with these armor-steel discs—3200 of them—so imbedded within the tread that no nail can enter. Three layers, overlapping to form perfect protection—with heavy fabric between to prevent friction, heating or working loose.

Smile at Miles

Before you think of starting on that tour, equip with "the tire that put the sure in pleasure."

Lee Puncture-Proof Pneumatic Tires are puncture-proof. You cannot lose—these added-service pneumatic tires are sold under a

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Furnished in regular tread or the **Lee "Zig-Zag" Non-Skid**—effective protection against slippery, slimy roads. Made of the live, extra dense, doubly tough

"Vanadium" Rubber

(used only in the Lee factory) which assures longer life, greater resiliency and comparative freedom from oil rotting.

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now running in the Saturday Evening Post. In addition to this one great medium with its circulation of two millions, the Lee story is being told through twenty-odd other leading magazines, totaling over nine million circulation, every month this season, in spaces ranging up to full pages.

Practically every autoist in America is seeing this Lee good news, not once a month, but many times.

When they read about the **"Zig-Zag" Non-Skid** and make a straight line for your store—what are you going to do? Will your arguments grip and hold their trade like this perfected non-skid tread grips the road?

Will your talk on tire service be absolutely puncture-proof like the **Lee Puncture-Proof Pneumatic**?

When you talk of added mileage, will you be able to cite **"Vanadium" Rubber**—the exclusive Lee Process which has been hailed the country over as the biggest recent development in the rubber industry?

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This is the Tire Line that the motorist wants. Why not make money and save effort by tying to the Lee Line?

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Established 1883

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**Level the bumps and make
the road seem smoother**

**More Speed
Smoother Riding**

Any motorist who equips his car with Velvets can drive as fast as he likes over the same old roads and he'll think they are smooth. The same old ruts and rocks are there—but the Velvets absorb the shocks and make the roads seem smoother.

**Save Power Plant
Reduce Fuel Cost**

Velvets save the life of the power plant—give it increased efficiency and reduce the cost of fuel. They eliminate all jolts and jars—prevent spring breakage and side sway—reduce the wear and tear on the car—increase its second hand value. Easily attached to any car—special prices for Ford models.

**Sell Your
Trade Velvets**

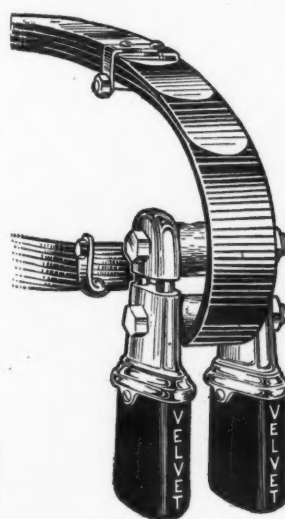
We send any dealer a trial set of Velvets on a money-back guarantee. You risk nothing by trying them, and your cus-

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Get the exclusive agency for Velvets. Write today. Don't wait until tomorrow. Ask for our descriptive booklet and special dealers' prices.

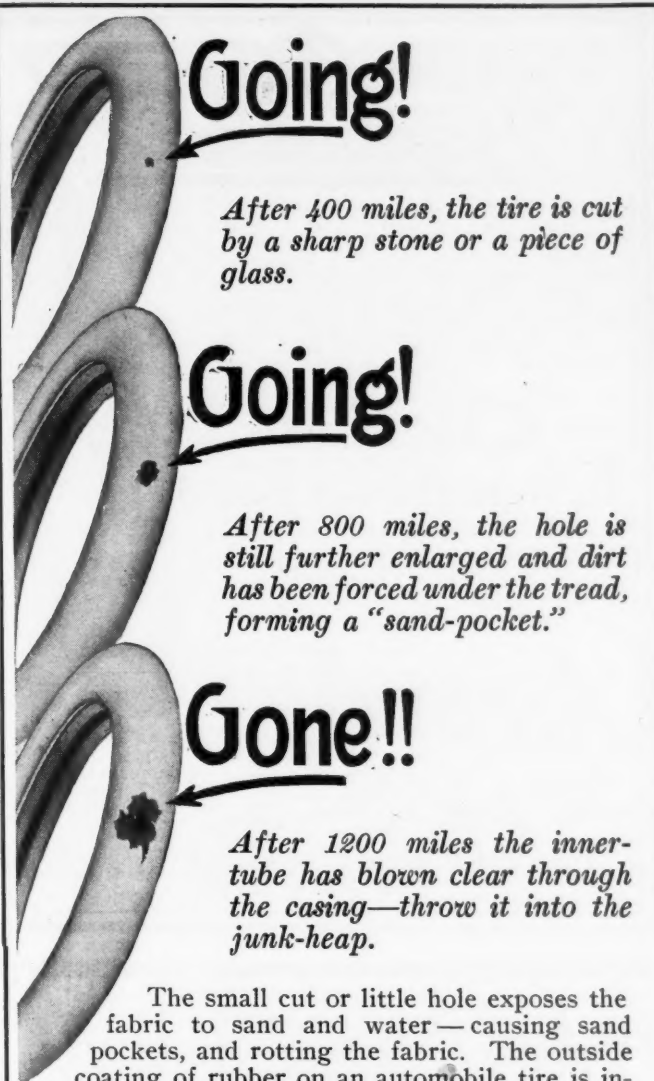
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Velvets were the first successful cushion type absorber in the world. Time has proven their efficiency.



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Going!

After 400 miles, the tire is cut by a sharp stone or a piece of glass.

Going!

After 800 miles, the hole is still further enlarged and dirt has been forced under the tread, forming a "sand-pocket."

Gone!!

After 1200 miles the inner-tube has blown clear through the casing—throw it into the junk-heap.

The small cut or little hole exposes the fabric to sand and water—causing sand pockets, and rotting the fabric. The outside coating of rubber on an automobile tire is intended to protect the "carcass" or fabric of the tire from wear and water. Keep the protecting coating of rubber in good condition and you will greatly increase your mileage.

SHALER Vulcanizer **Trebles Your Mileage**

You can repair any puncture, blow-out, tear or hole in a few minutes with a Shaler Vulcanizer and make the repair the strongest part of the tire.

Remember that your old tire might just as well have run 10,000 miles. The new one will run 10,000 miles if you vulcanize it with a Shaler.

Prevent Blow-Outs and Save Repair Bills

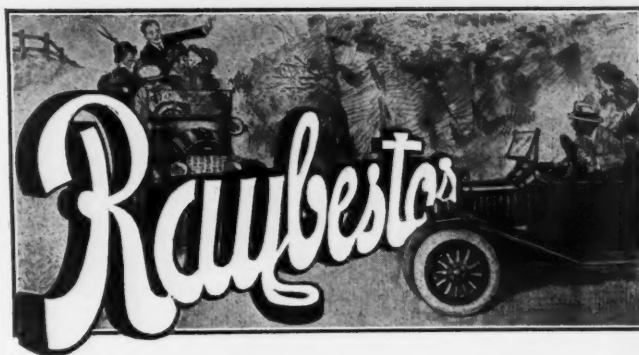
by keeping your tires in sound condition. Every time you seal a cut or repair a hole in your casing you prevent a blow-out—and possibly a serious accident—that is bound to occur if the cut is left open and the fabric exposed to dirt and water. A little intelligent care of your tires will pay big returns in the saving of repair bills and increased mileage.

Get Our Free Book, "Care and Repair of Tires"

Every motorist needs it, because it tells what to do for every kind of tire trouble and gives valuable hints about the care of tires. Catalogue gives full information about our complete line of vulcanizers—Electric—Gasoline—Alcohol and Steam for every requirement of the motorists' use at home and public garage service.

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The Largest Manufacturers of Vulcanizers in the World



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"Oh, we're all right. My brakes hold like a stone wall ten feet thick."

"So do mine—mine are lined with Raybestos."

"Sure. Mine are, too."

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You will never have an accident due to slipping brakes if your brakes are lined with Raybestos. Raybestos retains its tremendous gripping power even when worn down as "thin as a shadow," because it is made of long fibre asbestos and impregnated with our special treatment in every shred. Our exclusive patented process alone makes this possible.

The proof of Raybestos quality is this guarantee: If it fails to give a full year's service, we will furnish new lining without charge. No other brake lining has a definite guarantee.

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Raybestos
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NEWOLITE
 Electric Lighting for Ford Cars.
Makes Night Riding Safe
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\$40 Complete**NEW LITE SALES COMPANY**

1200 NEW LITE BUILDING

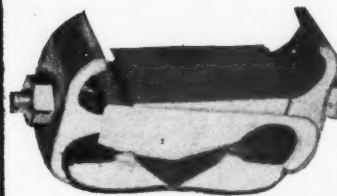
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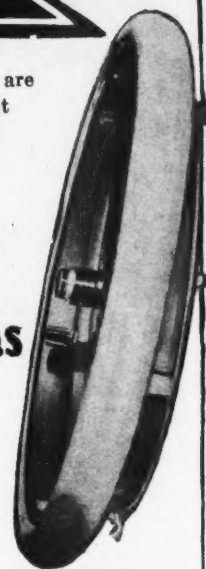
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 over-size tires without changing or alter-
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 A set of five (one for spare)

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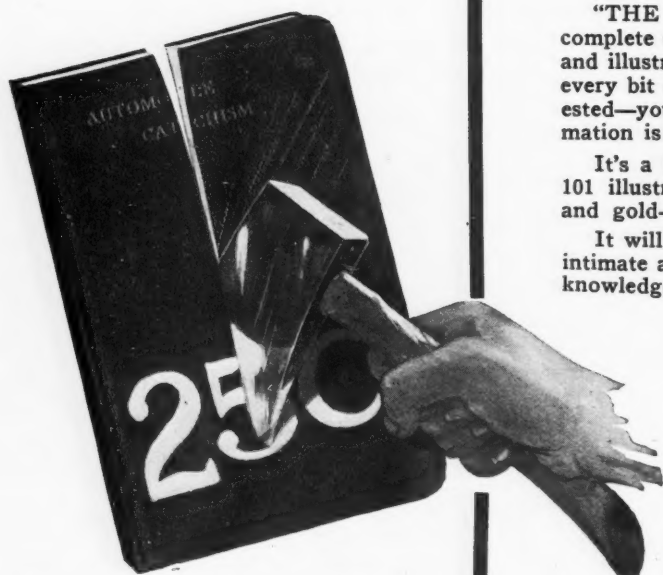
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DETROIT, MICH.****Tuesday and Wednesday, July 21st and 22nd, 1914, at
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The sale of the R. C. H. Corporation includes Machine Tools, Engine Lathes, Drill Presses, Universal Milling Machines, Turret Lathes, Grinders, Gleason Gear Cutters, Screw Machines, Shapers, Hack Saws, fully equipped forge shop including four 2500 pound Drop Hammers, Trimming Presses, Annealing Furnaces, Electric Welding Machines, Shears, Belting, an enormous supply of small tools such as twist drills, reamers, gauges, cutters, 400 tons forge iron, bar iron, flat iron, round iron, tool steel, etc. Machine tools and small tools both to be sold in separate lots only.

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Add the pleasures and comforts of *easy riding* to the dependability of your Ford car. Don't let "car fatigue" caused by rough roads spoil a day's motoring enjoyment. Equip your Ford car with—

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They knock the shock—give perfect results on any road, under any load. Constructed of best materials obtainable, including drop forgings, Bronze Rocker plates and Bronze bushings. Unlike other shock absorbers, they never sway when taking sharp curves. However rough the road, the downward motion on their spiral springs is **always at right angles**. Can be attached in one hour by any Ford owner.

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Order through your dealer or sent direct prepaid on receipt of remittance. Absolutely guaranteed.

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\$10
WITH GAUGE

HANDPHONE

A Perfected Mechanical Horn

**NO** Adjustments
Motor Troubles**NO** Electrical Wiring
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The latest and most efficient hand operated horn. Reliable at all times. It clears the road regardless of traffic conditions.

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Steamers arrive and depart from Third Avenue Wharf, Detroit.

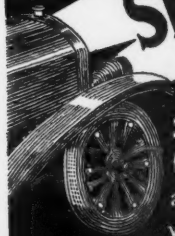
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Carry it
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Guaranteed a Year

We also make the HERZ MAGNETO

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"It takes time and experience—especially experience—to enable a concern to ship really dependable parts.

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"We are surely capable, in lieu of these facts, as for thirteen years we have been manufacturing automobile gear parts for the most successful and best known motor car manufacturers in the country.

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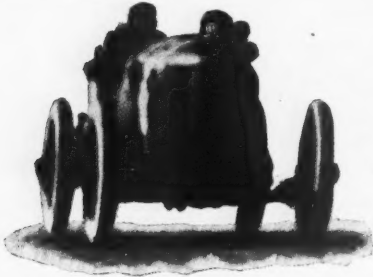
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It is an extremely high grade yet surprisingly inexpensive instrument.

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Dealers—Write for exclusive agency proposition

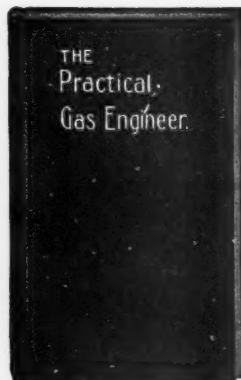


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We desire additional dealers where we do not have representation at the present time. A demonstration is a sure sale. Our policy is a liberal one. Our contract with dealers is for three years. Write or telegraph today—tomorrow may be too late.

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You can greatly increase the power, speed and hill-climbing ability of your car and mileage per gallon of gasoline by adding SU-DIG Series Plugs to the set now in use. Great for low-grade gasoline.

Write now, giving name of your car.

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More Power—More Miles



GEARLESS TRANSMISSION

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Big Model 5-A
SIMPLE—STAUNCH—TRUE
A Car Full of Hill Climbing Ability

Interesting Facts About the Gearless Transmission
Sent Free—Write for them.

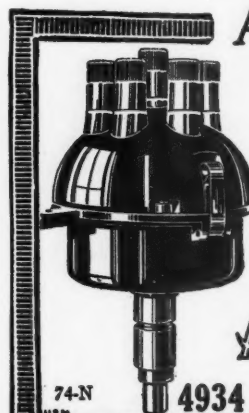
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A car that rides like an ocean yacht. A motor with magnificent power, equal to any load or climb—as flexible as the hair-spring of a watch, and nearly as quiet. Equipped with everything worth while, including electric starter, if you want it. And, best of all, a car of rare and exceptional beauty—the kind of beauty that impels people in the street to turn for a second longing look. Furthermore, we give your personal car a distinct individuality that will please you. Send for catalog.

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For every kind and make of motor. A system ideal in efficiency, simplicity, and reliability.

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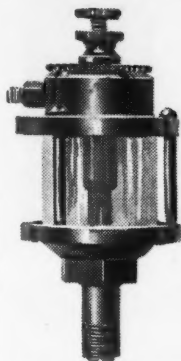
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You may buy 1000 gallons of water. This is sufficient to clean the carbon from 3000 motors—when used through the "HAWXHURST," or run your car 100,000 miles and save from 25 to 50% in fuel bills. Prices from \$6.00 to \$15.00. Ford Special, \$6.50.

All Devices Guaranteed or Money Refunded

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Style 4827
Price \$3.00

This "Grip-Tite" feature
gives ease and safety

The special feature of this splendid glove is that the double palm has corrugations, giving a firm, non-slip grip with but slight exertion of the gripping muscles—and double the wear. This is only one of the many exclusive features that mark the superiority of

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Best for Every Purpose

All are made of velvet Coltskin or Reindeer, soft as kid and wear-resisting as raw-hide. Grinnell Gloves are positively guaranteed not to crack, peel, shrink or harden, they are washable in soap and water or gasoline and dry soft as new. Ask your dealer for Grinnell Gloves. If he does not carry them, send us his name and your size. We will send your selection on approval. Handsomely illustrated booklet with samples of leather on request.

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Established 1856

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KOEHLER ONE TON TRUCK \$750

GREATEST VALUE AT THE PRICE • LOWEST PRICE • CAPACITY

Here are brief specifications: Motor, 24 H.P., water cooled, 4 cycle; Ignition, high tension magnet o. Tires, 36 in. solid std. removable, also non-skid demountable pneumatic tires optional at extra price. Tread, 58 in. Axles, 2 in. sq. rear, 1 1/2 in. front. Transmission, proved right, by years of use, runs in oil bath.

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KOEHLER \$750

ONE TON TRUCK

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DEALERS Now about your city or town—is it Koehlerized, or waiting for someone to reap a harvest from sales? Will it be you, or one of your competitors, who will make it hard for anyone else to sell any other make of truck? The Koehler is a great money-maker for dealers, being the lowest priced ton truck and giving greatest value at any price.

Another Koehler model that looks twice the price

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ONE TON TRUCK
ONE TON TRUCK



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The McCormick Power Plug

[It Replaces the Spark Plug]

This device embodies a remarkable firing process by which the ignition current is transformed into an infinite number of high frequency sparks. The result is full power explosion strokes maintained in regular service instead of merely "smooth ignition."

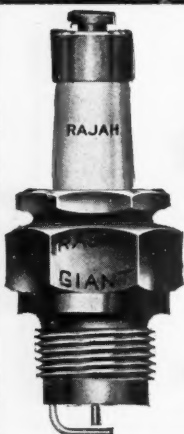
Write for letters showing unequalled conservation of both power and fuel. Better still, fill out form below and we will send a set by parcel post insured for 20 days' trial on your own machine. As a bookkeeping facility you can send check or money order at \$2.00 for each Power Plug. This money will be refunded if you are not in every way satisfied.

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Make and model..... Thread.....
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For pleasure car,
motor boat or
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Porcelain and
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and strong.
Extremely sim-
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for cleaning —
only four parts
— shell, porce-
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With proper care
GIANT Plugs can
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Are easy to use and easy to sell. They are durable and efficient and are widely advertised. The cylinders are of seamless brass tubing which cannot rust. The “Stapley,” the “Aeolus,” “Windjammer,” etc., give lasting satisfaction. Carry them in stock.

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Continental 6 P motor, 48 H. P. Bosch Ignition, Brown-Lipe 4 speed forward transmission, Spicer Universal joints. Timken full floating rear axle. Timken front axle with Empico speedometer drive. Timken bearings throughout. Long radiator. One man top. Gemmer steering gear. Left drive, center control. Goodrich tires, 34x4½. Electric starting, generating and lighting. 130-inch wheelbase. 3,600 lbs.

Two pass., \$2485; Five pass., \$2485; Seven pass., \$2535

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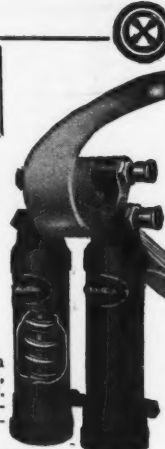
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the shock absorbers that have made good on heavy and light cars alike. The adjustment feature found only on Coxajustos is the reason for their superiority. A simple twist of the wrist adjusts them to the load. There is a model especially for the Ford.

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Model T. Runabout	\$500
Model T. Touring Car	550
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With Full Equipment f. o. b. Detroit.

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Quality trunks built for service. We make the strongest and best as well as the most economical motoring trunks in the world. Styles for every car—sizes for every need. Wide range of prices.

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NO MOVING PARTS ONLY ONE ADJUSTMENT

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Detroit Mich.

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3 1/2 x 5 1/2 four and six cyl.
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Standard or Unit and
4 x 4 and 4 1/2 x 5 1/2 standard types, all L head, 4 cycle.

Manufacturers are invited to investigate our service and our facilities.
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Model "36" \$1275.00

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Gray and Davis Electric starting and lighting equipment, silent chain cam shaft drive, four inch by five inch motor, cork insert multiple disc clutch, 1 1/2 inch wheel base, left side drive, center control, and equipment complete to the last detail.

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Electric Auto-Lite equipment for automobiles is as famous for the service that backs it as for the reliability and economy of its operation.

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Oilproof
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In road races and daily service Wisconsin Motors have established a wonderful record for efficiency and endurance. They start easily, run steadily and are always under perfect control.

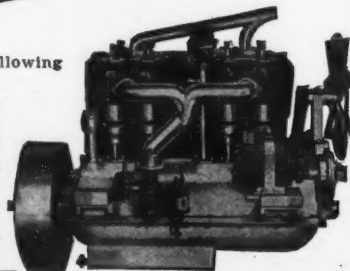
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3" x 5"	4 Cyl. Enbloc
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4" x 6"	6 Cyl. Three Enbloc
4" x 5"	6 Cyl. T Head
5 1/2" x 7"	6 Cyl. T Head

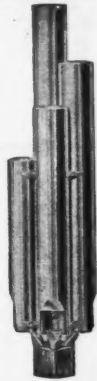
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Dept. 25, Milwaukee, Wis., U.S.A.



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The AERMORE Exhaust Horn

The ideal auto horn. It clears the road every time with a musical signal that does not shatter the nerves.

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Write for our catalog and discount sheet, and learn how to obtain a FREE HORN for your demonstrator.

THE FULTON COMPANY

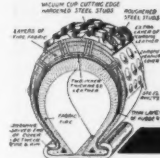
724-726 National Avenue, Milwaukee, Wis.

Guaranteed for 10,000 Miles Bricton Pneumatic Tires

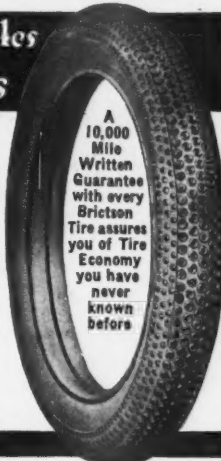
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If you are not in need of new tires and the fabric in your tires is still good, we can rebuild them the Bricton Way, give you thousands of miles additional service and make them Puncture-proof, Blowout-proof, Skid-proof, Rut-proof, Rim cut-proof, Oil-proof and Gasoline-proof.



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The performance of Eisemann Ignition Systems during the Indiana-Pacific Tour justifies every claim we have ever made for Eisemann efficiency and dependability.

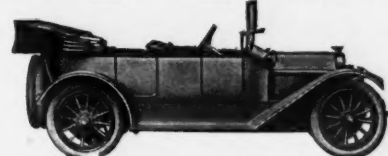
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A close-coupled five-passenger touring car suitable for long distance work, where speed and comfort are demanded.

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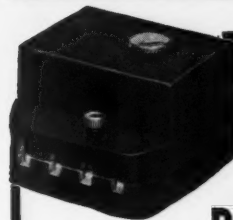


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The Heart and Brains
of an electric lighting and starting system. The

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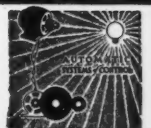
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DYNAMO CONTROLLER

Dynamos controlled by the famous Ward Leonard Controller are in a class by themselves.

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RESILIENT Detroit Springs SILENT TRADE MARK SELF-LUBRICATING

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"32" Touring Car, fully equipped.....\$1050
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 "32" Touring Car or Roadster with Westinghouse two-unit electric generator and starter; electric lights; over-size tires 33x4 inches; demountable rims, extra tire carrier at rear\$1200
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All prices F. O. B. Detroit

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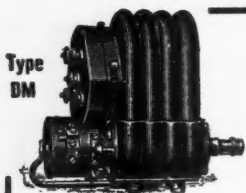
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"The Car of Instinctive Control"

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The performance of **HEINZE IGNITION APPARATUS** for the past ten years justifies our claim that our product is superior in both points of construction and efficiency.

HEINZE ELECTRIC COMPANY

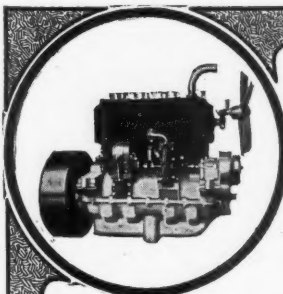
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We have a money making proposition for every live dealer in the country. It will pay YOU to investigate it NOW.

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Not made to meet a price, nor to shatter records of quantity, but to fulfill a service ideal—to be a true

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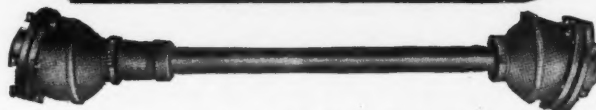
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Universally Accepted as the Most Dependable Flexible Connection Known to Motor Car Practice

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\$850

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The Vulcan 27
The World's Greatest Light Car

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Send for catalog and generous dealers' proposition.

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SOLVES THE
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For You
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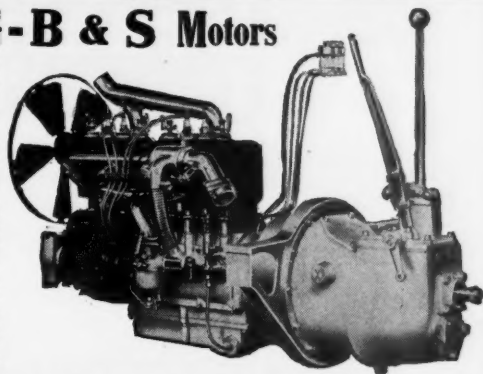
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We beg to
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latest four cylinder
Unit Power
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This Motor includes the recognized engineering practice, here and abroad.

"Craftsmanship of long experience is the result of this distinctive Power Plant."

Detailed information on request, and we are in a position to make prompt deliveries according to contract.



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DYNAMO-BATTERY LIGHTING OUTFIT

The one logical outfit
for your FORD. Easily
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DYNAMO, BATTERY, LAMPS, WIRE, ETC. **\$50 COMPLETE**

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What the Moore Multiple Exhaust System Means to You



By this system, exclusively our own, you gain 22.8 per cent more power with the same amount of fuel. Great economy and more power when you want it. No back pressures in the exhaust manifold. The clean incoming gas is undiluted.

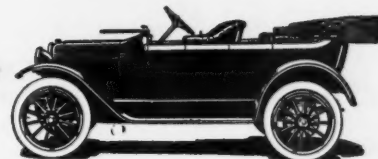
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The *Detroit* — A Complete Line \$850 to \$1050

Five
Passenger
Touring
Car



32 H. P.
Long
Stroke
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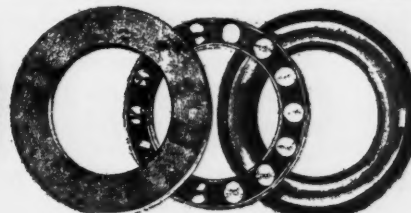
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COMPLETE THRUST BEARING

The Star Ball Retainer Co.
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Manufacturers of Radial Ball Retainers, Thrust Ball Retainers, Complete Thrust Bearings



It Takes a Mighty Efficient Lubricant to Withstand the Strain Imposed Upon the Universal Joints of a Motor Car

That's why thousands of motorists insist upon using

TRADE MARK
NON-FLUID OIL
REGISTERED IN
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For Universal Joints

The contact parts of universal joints must be separated by a strong lubricating film else they run hot. Ordinary grease must melt before it will feed and then it quickly wastes off, thus increasing friction and power loss. NON-FLUID OIL is unaffected by heat or cold—keeps universal joints cool at all times—and gives the most durable and economical service possible. Send for free sample.

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New York & New Jersey Lubricant Co.,
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Each section 2 in. wide, $\frac{1}{8}$ in. thick. They hook to rim. As flexible as ever. Anti-Skid, Can't Blowout or Rim Cut.

How can the rubber wear off if it is covered with steel?

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Special prices to the first in new territory

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LEECE - NEVILLE

STARTING and LIGHTING SYSTEM

Take a look at it on HAYNES CARS

WRITE US FOR FULL INFORMATION

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Makers of

HOYT AMMETERS AND VOLTMETERS

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IMPORTANT NOTICE

When you order Dayton Airless Tires give the exact weight of car or the make and model.

Each size of these tires is made in several carrying capacities. This permits us to suit the riding quality to the weight of your car. This great advantage is found in no other tire. Attention to this detail will give you comfortable service and economy.

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Retail Branch
1932 West 8th St.

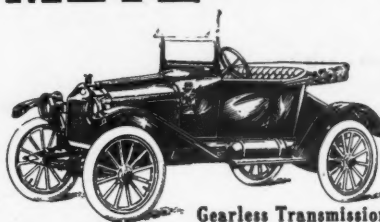
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\$495

Equipped Complete



Gearless Transmission

Fore-door body, extra thick tufted upholstery, plate glass rain-vision wind shield, left-hand drive with center control, 4-cylinder, 22½ H.P. water-cooled motor, Bosch magneto, Prest-O-Lite tank, extension top, full elliptic springs, artillery wheels, best quality Goodrich clincher tires, 6 lamps, horn, pump, jack, tools. Speed, 50 miles per hour. Beats 'em all at climbing hills. Secure EXCLUSIVE SALE in your territory. Write for terms and Catalog "K."

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The Clearing House, of the Motor Car Industry

*For Second Hand Cars Surplus Parts, Accessories, Tires,
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ADVERTISING RATES 1/4 inch—One time \$2.40. 1 inch—One time \$4.50. 1 1/2 inches—One time \$6.25. 2 inches—One time \$8.75.
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A 3 1/2-ton Couple-Gear truck with power in all the wheels. Motive power gasoline engine and generator supplying electricity to the wheels. This is a new truck, has been used only for show purposes.

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One to three Sultan Motor Co. taxicabs, all in good running condition, cheap.
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\$2,350 Maxwell, used as demonstrator for short time only; looks like new; will sell for \$1,500.
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Latest model, convertible roadster and coupe. Tires like new. Just been repainted and looks and runs like new. Will sacrifice.
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In good condition, paint in good shape, fully equipped. Price, \$250.

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Parts sold separately.

Complete outfit \$275.00

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STEERING KNUCKLES, YOKES,
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10 Bosch K-4 magnetos, dual, complete with coils and 4 magnetic plugs for \$30.00. Also 15 Bosch K-4 magnetos, single, with 4 magnetic plugs for \$25.00. Guaranteed in good condition.

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Ask for Special Price List

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First lists available under new law. Automobile registrations furnished weekly during entire year 1914 for \$50. Also have dealers and motorcycles.

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The Clearing House—continued

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CHARLES E. RIESS & CO., Inc.
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Rear Axles with 3 speed transmission, complete with hubs, hub caps, bearings, 36x4½ wheels with demountable rims, torsion tube, drive shaft, universal joint, complete, \$150.00.
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Seat covers and body building, remodeling and trimming. Write for prices.

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Commercial Bodies for Ford Cars

Hand made seat covers for all cars

We clean seat covers

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We guarantee them as

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All sizes and makes in stock ready for immediate delivery

At Prices that will interest you

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Tubular.....22.00

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Air Drying, Glossy Refinisher and Color Finishes—all colors. Write us condition of your car.
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Full wood panel

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12 styles, all sizes. Agents wanted everywhere.

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For the Ford Car

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PRICES RIGHT

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We build new cores for all makes and for all cars. Get our prices. You will save money.

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with Top, upholstered and painted, for \$35.00 Dealers only.

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Gas Head Lamps, per pair6.25
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3" Buffalo Carburetors3.00
Oval Gasoline Tanks—1x2x2915.00
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Ford Lighting Generators30
Ford Wheel Pullers8.20
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Ford Spark Plugs8.00
4 Cyl. Remy Coils7.00
Spitdorf Coils3.95
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Electric Side Lamps—for cycle cars35
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100 Assorted Washers3.50
Eric Pipe Wrenches1.25
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Auto Jacks3.09
Tire Pumps75
Metal Polish—1/2 and 1 gal. cans, per gallon79
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Tire Chains, many sizes, for3.00
Bulb Horns—complete	
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Stewart Gas Savers	
Radiators for many cars	
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Almost Everything at a Special Low Price—
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This is my fifty-third sale. I have closed out that many factories.

Herreshoff

Motor Car Owners

This company has been reorganized under new management and with new capital. We are moving our plant to Indianapolis, Indiana. Our policy will be to furnish prompt, first class service for all repair parts to Herreshoff cars. For immediate attention to orders for repair parts write direct to our new factory, South Meridian Street and Belt R Ry., Indianapolis, Indiana.

Herreshoff Motor Co.

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INDIANAPOLIS, IND.

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Save \$25 to \$75 by doing the work at home with the Arsenal system. Our big free booklet, "The Car Beautiful," tells how. Send for it today.

Arsenal Varnish Company
Auto Dept. Rock Island, Ill.

PARTS! PARTS! PARTS!

We have a large stock of parts for Chalmers, Carter Cars and Ramblers which we will sell for half price.

PACIFIC CAR COMPANY

Tacoma, Wash.

RECTIFIERS

To change from A-C circuit 1 to 8 ignition, lighting or starting batteries at one time; \$12 and upwards. **AMERICAN BATTERY CO.,** 1124 Fulton St., Chicago.

Radiators

Our Genuine Cellular (commonly called Honeycomb) radiators will properly cool your motor. Each radiator carries with it "a money-back-if-you-want-it-guarantee."

Ford "T"\$25.00
Buick 10-24-25-34-35-3627.50
Buick 16-17-19-26-27-2835.00
Buick 21-33-39-4337.50
Cutting 3522.00
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5% Discount allowed for cash with order. All orders shipped same day as received.

DETROIT RADIATOR & SPECIALTY CO.
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The Clearing House—continued

REDUCE THE HIGH COST OF RUNNING YOUR AUTOMOBILE BY BUYING SUPPLIES AT LESS THAN MANUFACTURERS' PRICES FROM THE ORIGINAL "PRICE WRECKERS."

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Every Item in This List a Bargain
Read Every One Carefully

Following is a list of a few of our especially good values. It is not a complete list of our stock. Do not hesitate to call on us if you are in the market for anything not listed.

Schebler carburetors, 1 1/4" Model "D" and "L".....	\$ 7.90
Holley carburetors.....	2.50
Rayfield carburetors.....	6.50
Kingston carburetors.....	\$2.50 to 4.00
Side oil lamps, per pair.....	2.75
Electric headlights, regularly \$25. Our price, per pair.....	8.00
4 and 6 cylinder Gleanol Imported magnetos, high tension. Regularly \$100 to \$150. Our price.....	\$15 and 20.00
Bosch low tension magnetos.....	5.00
Remy magnetos, model "S".....	9.00
Spittorf dual outfits, complete.....	25.00
Magneto coils.....	\$4.00 up
4 and 6 cylinder Connecticut coils.....	12.00
Storage batteries.....	\$8.00 up
Steering columns, complete with wheel.....	15.00
Stewart-Warner and Jones speedometers.....	1.50
Velvet shock absorbers.....	10.00
Mondex shock absorbers, per set of 4.....	20.00
\$40 Disco starters.....	5.00
Racing seats, regularly \$50 per pair. Our price, each.....	15.00
1914 Ford runabout bodies.....	40.00
Roadster bodies, each.....	30.00
Peerless 7-passenger bodies.....	35.00
5-passenger fore-door bodies, each.....	85.00
Axles, complete, front and rear.....	\$40 up
Ford radiators, new.....	17.00
Radiators—Cadillac, Pierce, Knox, Stevens-Duryea, Flat, Warren, Olds and a hundred others.....	\$17.00 to 35.00
Ball bearings, all sizes, less than one-third.....	
Round gasoline tanks.....	6.00
Square gasoline tanks.....	2.50
Lavaline oilers.....	\$5.00 to 7.50
Presto tanks, complete.....	13.50
Continental rims.....	3.00
Drain rims, all sizes.....	\$2.50 to 3.00
Universal joints.....	5.00
Rear tire holders, 1 or 2 tires.....	1.75
Electric horns, complete.....	1.95
\$25 trunks.....	5.00
Tire covers.....	.75 cents and 1.00
\$25 windshields.....	9.50
Mohair dusters.....	3.50
Chauffeurs' dusters.....	1.00
Storm fronts and side curtains.....	1.00
Appleco Lighting System, complete.....	40.00
Brown-Lipe transmissions.....	50.00
Top covers.....	2.50
Reliners.....	.35
Single, double and triple action pumps.....	.75c up
AI tires and tubes:	
30x3 casing \$ 6.65	Grey tube \$2.35
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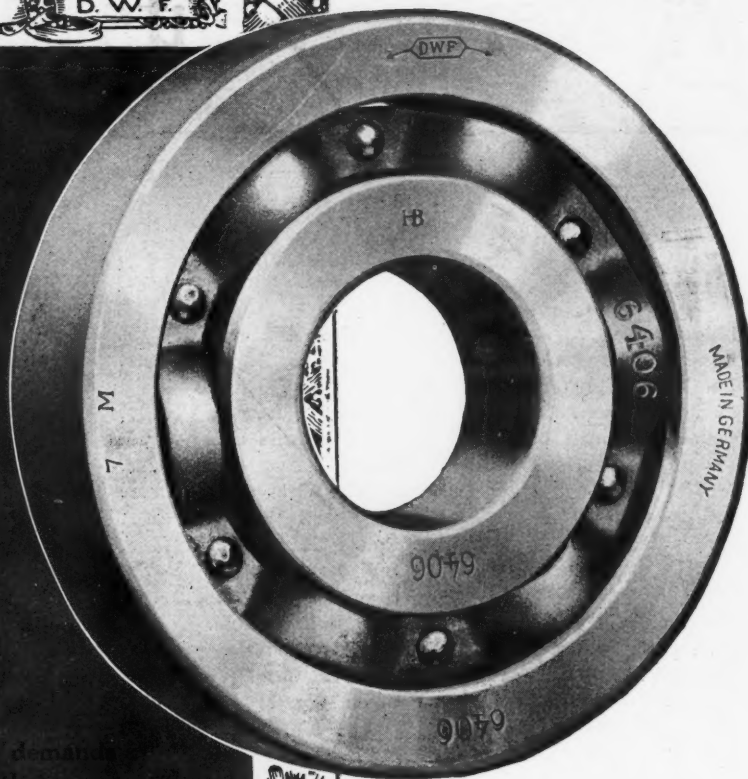


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